Yarmouk University

Faculty of Economics and business administration

Banking and Finance department

The Impact of Firm's Capital Expenditure on Working Capital Management: an Empirical Study Across Industries in Jordan

اثر الإنفاق الرأسمالي على إدارة رأسمال العامل: دراسة حاله تطبيقيه على الشركات الأردنية

Supervisor by

Prof. Dr. Mona AL-Mwalla

Researcher

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BY

Randa Adnan Al-Tayyan

B.Sc. Banking and Finance department, Yarmouk University, 2004.

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Committee:

Prof. Mona M. AL-Mwalla ....Chairman

Professor of Banking and Finance, Yarmouk University.

Dr. Demeh Daradkah..Member

Assistant professor of Banking and Finance, Yarmouk University.

Dr. Jumah Abbad..Member

Associate professor of Banking and Finance, Al-Albayt University.

Junuary-2015

الْحَمْدُ لِلَّهِ الَّذِي هَدَانَا لِهَذَا وَمَا كُنَّا

لِنَهْتَدِيَ لَوْلَا أَنْ هَدَانَا اللَّهُ

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Dr. Demeh Daradkah

Dr. Jumah Abbad

Dedication

For the sake of Allah, my Creator and my Master,

To my homeland, my country, my paradise ………………………………Jordan
Land of magnanimity and generosity,

To my great Parents ……………………………………...Father and Mother
they are my life's biggest blessing, who supports me each step of the way, and without their love, prayers, and encouragement, this work. Would not have been achieved,

To my dear Sister…………..…………………...……..……………Manal
Who makes my life worth living, and brings joy in my life,

To my beloved brothers…………………..…………………Feras and Basil
Who are not only my brothers by birth, but also my dearest friends.

To my friends………………………………...…Asma, Amani and Maysoon
Who stood by me every time I tripped. and who are the reason I believe in my self,

To my little angels, and joy of my life..........……….......…Tala, Omar, Hashem, Mohammad, Yaman, Rayyan,

To my Brother and sister in law……………………...…………………..

To All the people in my life who touch my heart……………………...………

To every one stood in my path……………..……thank you for motivating me
It just make my bath more challenging, and my success is more meaningful,

To my university………………………...……..……Yarmouk University
My second magnificent home,

I dedicate this research.

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List of Abbreviations

Abbreviations	The Meaning of Abbreviations
NWC	Net Working Capital
WCR	Working Capital Requirements
NLB	Net liquidity Balance
CAPEX	Capital Expenditure
ASE	Amman Stock Exchange
FEM	Fixed Effect Model
REM	Random effect Model
VIF	Variance Inflation Factor Test
OPEX	operating expenditure
FIEX	financial expenditure
M/B	market to book value ratio
DR	debt ratio
SG	sales growth
OCASH	operating cash flow
ROA	return on assets

Abstract

"The Impact of Firm's Capital Expenditure on Working Capital Management: an Empirical Study Across Industries in Jordan"

اثر الإنفاق الرأسمالي على إدارة رأسمال العامل: دراسة تطبيقيه للشركات الأردنية

BY

Randa- Adnan Al-Tayyan

Supervisor:

Prof. Dr. Mona AL-Mwalla

This study aims to investigate the relationship between capital expenditure and the working capital management of (69) firms listed on Amman Stock Exchange (ASE) of which (42) industrial and (27)services firms, over the period of (2006 to 2013). Two determinants are used as proxy of working capital management, the net liquidity balance (NLB), and the working capital requirement (WCR).

The results indicate that there is an insignificant relationship between capital expenditure and working capital management for both sectors. And the results show an insignificant relationship between operating expenditure and (NLB). However, a positive significant relationship with

(WCR) for both sectors. For the financial expenditure the results indicate a negative significant relationship with (NLB), and a positive significant relationship with (WCR). As for the control variables; the results indicate a significant relationship between debit ratio (DR) and return on assets (ROA) ratio uses both (NLB) and (WCR) for both sectors. For operating cash flow (OCASH), the results show a significant relationship with (NLB) and (WCR) in industrial sector, and a significant relationship with (NLB) in services sector.

Key words: Capital Expenditures, Working Capital Management, Working Capital Requirement, Net Liquidity Balance, Industrial firms, Services Firms, Jordan.

Chapter One

General Overview

1.1 Introduction

1.2 Problem of the Study

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Chapter One

General Overview

1.1 Introduction

Basically, corporate finance deals with taking very important decisions on daily basis, the most important one is that related to working capital management, which is considered the key to maintaining running business smoothly and successfully.

Net working capital (NWC) refers to the current assets minus the current liabilities. The two component of working capital affect the profitability and liquidity of the firm. Therefore, managers must carefully control and plan current assets and current liabilities and avoid the risk of inability of the company to repay creditors on one hand and avoid too much investment in assets on the other hand.

Recently, corporations are striving to find new ways to stimulate growth, and face the challenges especially after the global financial crisis of 2007, that effected mostly corporations in the emerging countries, which belong to manufacturing firms with current assets representing more than half of their total assets . As well as, for the service sector which even requires less working capital for their little or no inventory, nevertheless working capital is necessary for the survival of the both industrial and services firms in order to be able to offer buying and extends credit.

Firms must take into account the liquidity of internal funds in order to undertake profitable project by balancing the cost of holding liquid assets, and the benefit of funding growth by internal funds rather than costly external funds.

Most of existing literatures in working capital management (WCM) focus on the determinants factors. Other researchers focus on the relationship between working capital management (WCM) and liquidity or performance.

Although capital expenditure has been one of the determinants factors in the past studies, the relationship between them, has not yet received the attention it deserves.

1.2 The Study Problem:

Firms in Jordan are mostly small in size with limited access to the capital market needed to survive and meet the daily operation and maintain liquid assets which is unlike large firms (Abuyzayed, 2012). Hence, small firms focus on internal funds, and its liquidity, as a major source of finance for decision making that stimulate growth opportunities by increasing the possession of fixed assets, especially if they are already operating at full capacity. This is due to the cost advantage over externally funds, and the limited access to the capital market (Butt *et al*, 2013).

However, the failure rate of small firms is more than in the large firms, as shown in Berryman (1983) study , that weak working capital management is the primary reason of small firms failure.

This study tries to support the relationship between capital expenditure and working capital management.

The problem of the study can be expressed through the following questions:

1. What is the relationship between capital expenditure and working capital components (net liquidity balance, and working capital requirements) in industrials and services firms ?
2. What is the relationship between operating expenditures and working capital components (net liquidity balance, and working capital requirements) in industrials and services firms ?
3. What is the relationship between financial expenditures and working capital components (net liquidity balance, and working capital requirements) in industrials and services firms ?

1.3 The Study Objectives:

This study presents an empirical work that aims to link working capital management with capital expenditure, by investigating the impact of capital expenditure on working capital measured in terms of net liquidity balance (NLB) which represents the difference between current assets and

current liabilities under the financial items; however, working capital requirement (WCR), which represent the difference between current assets and current liabilities under nonfinancial items.

In the light of the pre-mentioned questions, the specific objectives of the study are summarized as follows:

1. Finding out if there is a relation between capital expenditure and the firm’s working capital measured by net liquidity balance (NLB) and working capital requirement (WCR).
2. Finding out if there is a relation between operating expenditure and the firm’s working capital measured by net liquidity balance (NLB) and working capital requirement (WCR).
3. Finding out if there is a relation between financial expenditure and the firm’s working capital measured by net liquidity balance (NLB) and working capital requirement (WCR).

1.4 The Important of the Study :

Most of the research on working capital is conducted in developed market, little evidence of it has been in emerging market. Hence, this study conducts in Jordan to add new knowledge and exceeds other typical studies, and represents the importance of working capital management and its relationship with capital expenditures measured in terms of net liquidity balance (NLB) and working capital requirement (WCR).

The findings of the study help the financial managers in Jordan to manage working capital efficiently, and use it as an indicator for managing working capital and evaluating performance that might lead to maximization of firms stock value.

1.5 The Study Hypotheses:

In order to achieve the objectives of the study, the following hypotheses have been formulated:

H_1: There is a negative significant relationship between capital expenditure (CAPEX) and net liquidity balance (NLB).

H_{1a}: There is a negative significant relationship between operating expenditure (OPEX) and net liquidity balance (NLB).

H_{1b}: There is a negative significant relationship between financial expenditure (FIEX) and net liquidity balance (NLB).

H_2: There is a negative significant relationship between capital expenditure (CAPEX) and working capital requirement (WCR).

H_{2a}: There is a negative significant relationship between operating expenditure (OPEX) and working capital requirement (WCR).

H_{2b}: There is a negative significant relationship between financial expenditure (FIEX) and working capital requirement (WCR).

1.6 Structure of the Study:

This study is organized as follows: chapter two provides the theoretical back ground. Chapter three reviews the major empirical studies conducted about the topic. Chapter four presents the methodology and the data analysis. Chapter five discusses the result of the analysis. And finally Chapter six provides conclusion and recommendations.

Chapter Two

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Chapter two

Theoretical Background

2.Introdution

This chapter include three sections. The first section provides the definition of capital expenditure, its importance, and the method that usually used to decide which project will increase the value of the company; it also discusses the relationship between capital expenditure and working capital. The second section provides the definition of working capital, and their policy and cost, and also discusses the management of the two component of working capital which is current assets and current liability. finally the third section discusses the establishment and performance of Amman Stock Exchange.

2.1 Capital Expenditure

2.1.1 Introduction:

Standard and Poor's the major provider of independent credit rating recently has published the research indicating that global non financial capital expenditure decline by 1% in 2013, and it is expected to decline more in 2014 and 2015 as shown in figure (2.1). This is due to risk of weak return and uncertainty about demand that effect the executives deciding

whatever to increase capital expenditures especially after the financial crisis of 2007.

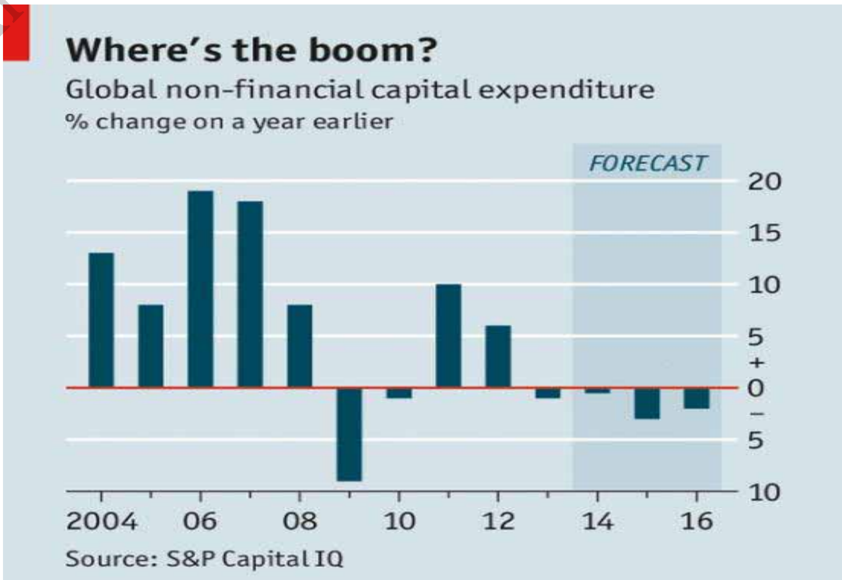
The importance of capital expenditure prevail when companies spend money in building new factory or new equipment, this simply lead to create new jobs and economic growth, which is positively reflected on the economy.

The report also indicates that without strong economic growth, companies will lower their capital expenditure. However, if companies stop spending on assets, there will be no economic growth.

For all these reasons, companies now in the entire world focus on managing their capital expenditure efficiency.

(Figure 2.1)

Global non-financial capital expenditure



Source: www.argaam.com
Standard and Poor's

2.1.2 Definition and Importance of Capital Expenditure (CAPEX)

Capital expenditure has many definitions, despite the difference in wording; all the definitions agree that (CAPEX) mean purchase of fixed assets.

Moyer *et. al* (2007,pp302) defines capital expenditure (CAPEX) as a "cash outlay that is expected to generate a flow of future benefits lasting longer than one year".

Generally, (CAPEX) is a long term investments, more than one year (Rajabi,1998), and affects the profitability of the companies during assets life, which is expected to last for several years.

The success or failure of any investing project depends heavily on the decision that is made in the beginning of the projects life, the decision must take into account that capital expenditure unlike other expenditure, is not easy to adjust or cancel the project payment, and it must take into account the time value of money, because these project usually need long time. In addition, capital expenditure decision sometimes requires from companies to borrow huge amount of money or increase their capital; this will affect the capital structure of the company(Hindi 1999).

Capital expenditure has a strong affect on working capital. Salehi (2012) proved this relationship and explained it. When companies purchase

new equipment, hence this is expected to increase the production and the consumption of raw material, leading to increase in sales and the cash flow come from sales, this will affect working capital; in turn has an effect on increasing the profit, and will affect positively on firms value. For all previous reasons, the decision of capital expenditure must be studied carefully.

2.1.3 Capital Expenditure Decision

The decision whether or not to invest in long term assets refers to the capital budgeting decision. The result of this decisions affect the companies' operations and financial status for long period, so managers consider this decision as the most critical decision that can be taken.

There are six techniques commonly used by companies to evaluate its long term investments (Net Present Value (NPV), Internal Rate of Return (IRR), Modified Internal Rate of Return (MIRR), Profitability Index (PI), Payback period, Discounted payback period). The first step of the techniques is to estimate the cash flows for each investments, and then select the investment that maximize the value of company, and wealth.

Managers after using the previous techniques to evaluate projects, can decide which project is preferable. All projects with positive net present value (NPV), or an internal rate of return (IRR) greater than required rate of return, or a profitability index (PI) greater than one are

accepted. The acceptance of all these project is possible under Independent decision, which mean that managers can choose all the accepted project, however is not always possible to accept all these projects, manager can select only one of them, which is the highest ranking. In this case, the decision is called Mutually Exclusive(Keown *et al*, 1985).

Unfortunately, it is difficult to choose from several project that all desirable under Mutually Exclusive decision. This conflicting in ranking problem occurs when the manager compare projects with unequal life or unequal size, in this case the ranking decision must be made on basis of subjective criteria (Hilton and Platt, 2011).

Some investment projects require investment in current assets in addition to investment in fixed assets in order to support and fund these projects, it is necessary to increase the current assets account such as cash, account receivable, marketable securities and inventories, which are financed by natural increase in current liabilities which include accounts payable and accruals. This increase in current assets is defined as net working capital.

Therefore, it is important to include the change in net working capital on net cash flow calculations as outflows, which also affect the net investment calculation, and accordingly will affect the decision of the project selection (Moyer *et al*, 2007).

2.2 Working Capital

2.2.1 Introduction

Normally, expansion in investment requires additional inventories, and expanded sale volumes also lead to additional account receivable. As a result the current assets increase, this increase must be financed by increases on current liabilities (Any increase on asset in balance sheet must match by the same in equity and liabilities side).

So, when the managers decide to make capital expenditure this will affect on both assets and liabilities, as well as net working capital (Gapenski, 2009).

2.2.2 Definition of Working Capital

Working capital is defined as current assets of the firm, and in border scope it refers to both the current assets and the current liabilities (Smith, 1979).

According to Guthman and Dougall (1948), the concept of working capital referred to current assets minus current liabilities, it is also referred to the net working capital (NWC).

Scherr (1989) declares that working capital management involves management of assets and liabilities in the top half of balance sheet ,which includes cash and cash equivalents, account receivable, inventories, and

marketable securities as current assets; and includes account payable, notes payable, short term loans, and accruals as current liabilities.

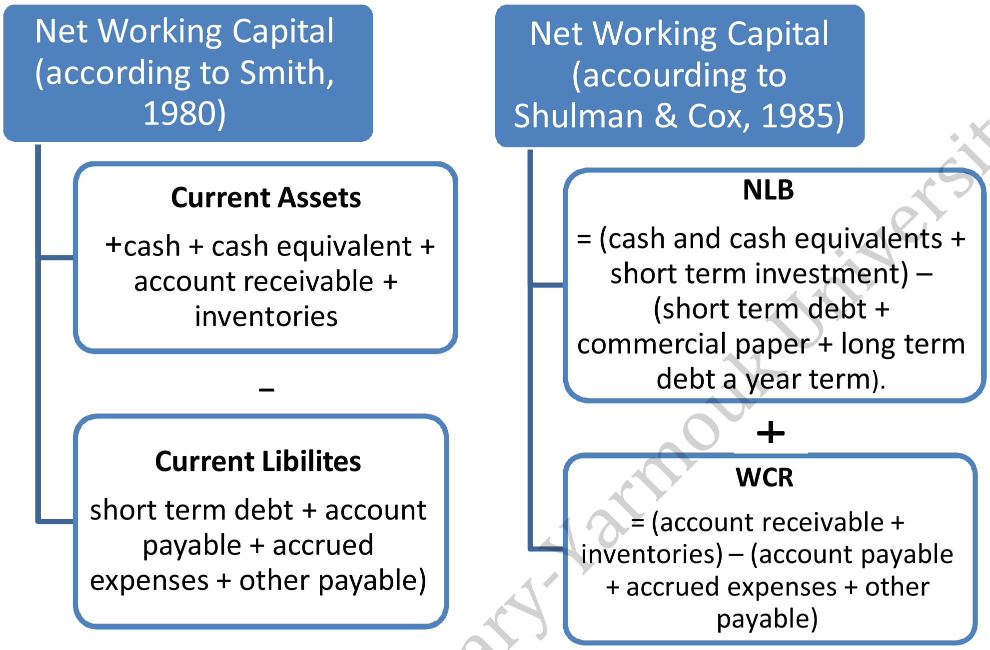
The concept of net working capital (NWC) is recognized as measurement of liquidity, which show the ability to meet short term obligations and at the same time avoid excessive investment (Eljelly, 2004).

Shulman and Cox (1985) argue with the previous researchers about the ability of net working capital (current assets - current liabilities) to provide a correct understanding of liquidity.

They explain that the components of net working capital have a varying degree of liquidity, so they classify the component into two categories as shown in figure (2.2). The first component called net liquidity balance (NLB) which includes cash plus marketable securities minus short term obligations which consider only those assets that represent a primary liquidity reserve. All other assets that rely on performance of anyone outside the firm are included only in the second component which is working capital requirement (WCR), such as customer paying inventory or account receivable (Hill and Sartories, 1995).

(Figure 2.2)

Net Working Capital component



Source: prepared by the researcher

Although the two components of net working capital (NLB and WCR) have different level of liquidity, they are interdependent. For example, if the firm reduces the collection period of account receivables, this leads to reduction in (WCR), and the cash balance rises, so the (NLB) increases (Appuhami, 2009).

2.2.3 The Importance of Working Capital Management

Working capital management plays an important role in firms by maintaining the financial health during the normal cycle of business.

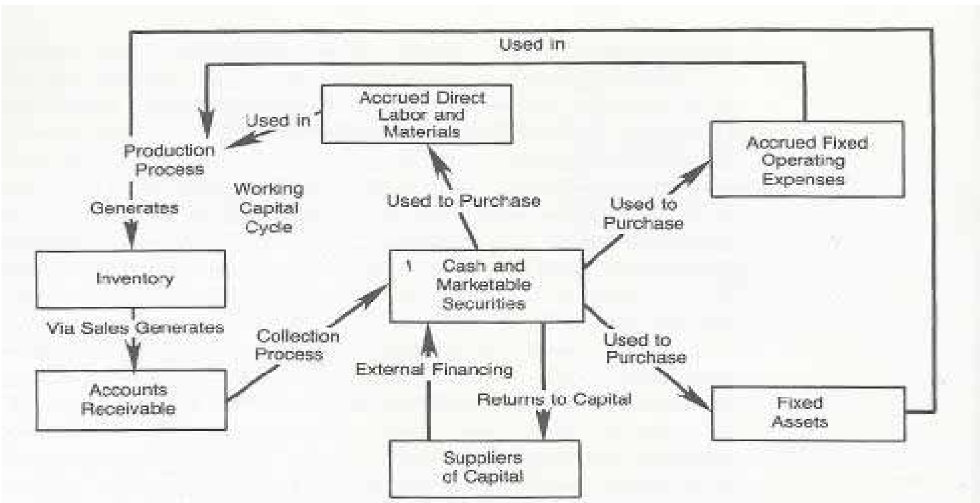
This role represents the flow of resources through the firm, which is called working capital cycle.

The cycle which starts at cash and marketable securities, which is used to purchase direct materials and fixed assets to produce inventory, which is sold and generate account receivable, and finally account receivable collected are turned in to cash as shown in (figure 2.3). However for service firms, there is little or no inventory. So unlike the manufacturing firms, the inventory step is deleted, and the other all parts of sources flow cycle are unaffected. (Scherr, 1989).

The firms must ensure that working capital cycle keeps flowing in order to survive; as long as there are cash and marketable securities to pay bills, there will be no problem. But if some of the sources stop flowing in because of slow turnover in one of working capital component, the firm faces a financial problem, bills will not paid, unless the firm takes action, although costly, as raising new internal or external fund.

Figure (2.3)

sources flow for manufacturing firm



Source:(Scherr, 1989, p4).

Therefore, financial managers keep some of liquidity (cash and marketable securities) as a safety, however this action may diminish the firm profitability, managers must balancing between profitability and liquidity, because on one hand, too little liquidity will lead to bankruptcy risk, and on other hand too much liquidity will lower the profit more than necessary.

Financial managers now understand the previous reasons, why working capital management is considered as a very important element of the firms survival, beside the previous reasons, recently a new developments that have taken place in the economy, have increased the concern in working capital management .

One of these economic developments is the increases in interest rate level, which makes the external financing costly, and the other one is money market deregulation, which provides a new access to new ways for short term financing and investment. This new development keeps firms seeking better and new ways to manage working capital in order to balance its liquidity (Scherr, 1989).

2.2.4 Working Capital Policies and Cost

The financial manager should match between the working capital policies with firms operations. These policies affect the profit and risk of the firm, which in turn affect shareholder value.

There are two working capital strategies, The first one called aggressive strategy which the firm operates with lower level of cash, stock and debtors' than the other strategy. This policy should increase the profitability of the firm, but will also increase the risk of liquidity. The second strategy called relaxed which means a larger cash balance and more investment in marketable securities, and more credit. This leads to decrease the profitability of the firm as result of high cost of investing capital with low profit generating assets.

Having determined the working capital policy, a firm must then determine the optimal level of current assets. Managers' decision involves not only tradeoff between risk and return as in working capital policy decision, but also between the increase and decrease in cost with the level of investment.

The two types of cost are carrying cost and shortage cost, carrying cost which the cost increases with additional investment, and shortage cost is the opposite of carrying cost, which defined as the cost that falls with increase with additional investment(Pike and Neale, 1993).

2.2.5 The Cash Conversion Cycle (CCC)

Cash is one of the main components of net working capital needed to run the firm on a daily basis. The cash cycle begins when the company

buys inventory from supplies, which typically buys on credit, and often sells to the customers on credit.

Cash cycle also known as cash conversion cycle (CCC) defined as the length of the time between when the company pays cash for its inventory and the time when it receives cash from sale of its products. When measuring the cash conversion cycle (CCC) of the companies, the following equation must be used.

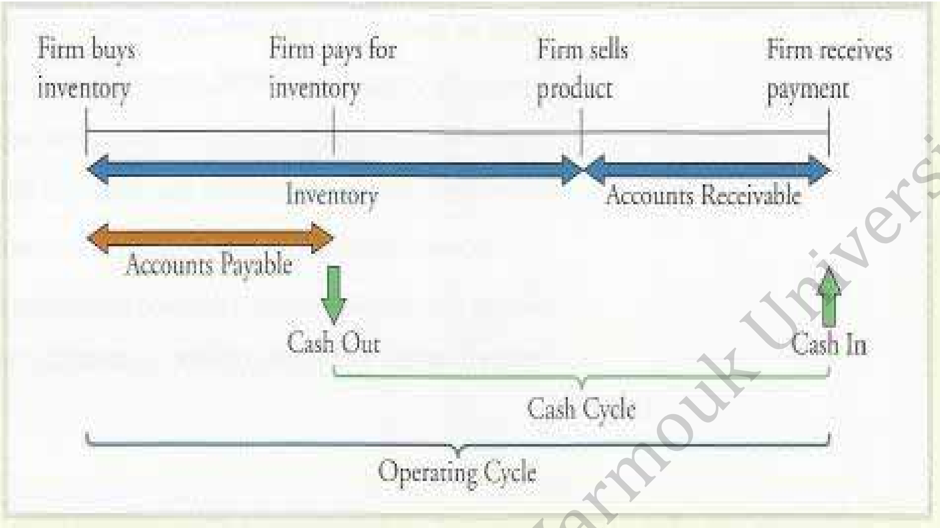
CCC=Inventory Days +Accounts Receivable Days - Account Payable Days

As mentioned earlier, the length of time between buying inventory and paying for it is not included in cash conversion cycle (CCC), and if it is included it will be called operating cycle. So, the companies operating cycle is known as the length of time between when company purchases its inventory and when it receives the cash from selling its product.

Operating cycle and cash cycle period are identical if the company is selling and buying inventory in cash; but if on credit, the cash cycle will be shorter. The longer the cash conversion cycle, the more cash is needed to run the company and the more working capital level. On other hand, if company has a negative cash cycle, this means it receives cash from customer before pays to its suppliers(Berk and DeMarzo, 2013).

Figure (2.4)

Cash and Operating Cycle for a firm



Soucer: (Berk and DeMarzo, 2013, pp830)

2.2.6 Net Working Capital Managements

As previously mentioned managing net working capital is concerned with managing both current assets and current liabilities. Therefore, the following section discusses the management of these two component in detail.

2.2.6.1 Current Assets Management:

1.Cash and Marketable Securities Management:

Cash is considered as a fundamental stone in firms building, it is very important to meet daily need, and to hedge from uncertainty risk of future cash needs, and it sometimes requires a compensating balance in banks for their services. Therefore, liquidity is very important to the firms,

but on other hand, liquidity has a cost that is associated with tax and the opportunity cost. For that reason, managers must always balance between the firms needs of liquidity and the cost of it. For example, the firms with high risk and growth opportunities tend to hold high percentage of cash, while firms with easy access to capital market, which has a low transaction cost, hold less cash than securities.

Short term securities are considered as the second liquid assets in the firms. The most important decisions that a manager must take into account when chooses the suitable kind of short term securities, is how much risk he is willing to take into account for higher return not mention how balancing between risk and liquidity needed for the firm. If the firm needs funds within next 30 days, it is proper to select the most liquid short term securities as treasury bills (Berk and DeMarzo, 2013).

2. Receivables Management

Account receivables are created when a firm allows customers to pay for goods at any date later than the date of purchase. A firm naturally prefers to be paid in cash, but this policy may cause to lose its customer competition (Berk and DeMarzo, 2013), so managers must balance its credit policy to the point where the benefit of increasing sales can lead to increase in profit equal the opportunity cost of tying up fund in receivables,

since money has a time value, and the cost of increase bad debt loses (Kim *et al*, 2002).

The expression "credit policy" refers to the decisions which affect the amount of trade credit that the firm will grant. Any credit policy can be somewhere in the range of Tight to Loose. Tight policy has a short credit period, and the sale on credit is only to customers with high credit rating. On other hand, loose policy has longer credit period, and sales on credit are for customers with lower credit ratings.

The firms must specify the condition of credit sale to establish the credit terms. One of these credit condition is the due date, which refers to the date that payment is expected. The other conditions is cash discount if is given, and the discount date. As an example 2/10, net 30, means a 2 percent cash discount if the customer paid the pill within 10 days, otherwise the full bill must pay in the 30th day.

The optimal collection policy must take into account the economic condition, where more flexible collection policy helps customers to get over the bad economic condition and the firm will also maintain its customers. In other hand, too lenient policy will raise the receivable cost, and reduce the profit. So, the optimal collection policy is not necessary mean faster collection or more lowest bad debt losses, it is the policy

which provides the highest profit by comparison of both benefits and cost of collection procedures (Joy, 1983).

3. Inventory Management

The efficiency of inventory management considers extreme important for two reasons. First, inventories represent the largest segment in firm's total assets especially for industrial companies. Second, inventories consider a least liquid of current assets; therefore, it is difficult to adjust any error quickly. The main goal is to reduce the inventories as much as possible, and to do so firms recently adopt Just-In-Time inventory system. This system orders goods to the order customers in the exact day of the delivery day, so there will be no need to keep inventories in storehouse (Kim *et al* 2002).

Despite of the cost associated with holding inventory, such as acquisition cost of inventory itself, and carrying cost which include storage cost, insurance and taxes for finished goods. Holding inventory also has benefits, it reduces the risk of input shortage in daily production, which may cause a lot of sale when disappointed customer switch to other competitors firm (stock out cost). Therefore, managers also must balance between the benefit and the cost associated with inventory (Berk and DeMarzo, 2013).

Managers have to decide the optimal inventory policy to balance the cost and benefit of inventory. Therefore, two steps are required. The first step is to classified inventory by indentifying the most important inventory item from value standpoint. The next step is to decide the best quantity to order, in this step manager must take into consideration to minimize the acquisition cost and carrying cost as much as possible (Joy, 1983).

2.2.6.2 Current Liabilities Management

After discussing the current assets management, this section deals with the second component of net working capital namely is current liabilities.

1. Account Payable Management

Account payable considered as a major source of fund for all sectors of the economy; especially, for wholesale and retail companies as well as the manufacture. It typically occurs when the sellers grant credit to the buyers by delaying payment day. The purchases do not have to be paid immediately. In order to encourage buyers to pay earlier, the suppliers offer a cash discount to the buyers if they pay in discount date; otherwise, the bill must be paid without any discount on due date.

There are many advantages in dealing with trade credit; especially for small firms. While banks require special arrangements to obtain loans

flexibility, trade credits do not. Hence, funds are available to these small companies. This suggests that the account payable will automatically drop or grow as well as sales and the purchasing power of the firm. If sales increase, the purchasing of good will also increase, eventually leading to increase the of payable automatically (Joy, 1983).

The major decision is whether to take the supplier cash discount or delay the payment to the due date. Therefore manager must calculate the opportunity cost of decision of delaying the payment to due date, this cost should be lower than the cost from another source, by borrowing money from elsewhere as demand deposit in bank, or to earn interest by investing money in money market account; otherwise, the payment must be paid in discount date (Gallinger and Healey, 1987).

2. Accruals expenses

Accruals and payables are almost similar; both are short term source of funds and available and easy to obtain as previously mentioned. Accruals mean that firms receive services before paying for it (Joy, 1983). Wages are considered as accruals which are paid after the service is provided.

4. Short Term Bank Loans

Firms usually rely on trade credit when there is a need for short term financing increase, but when trade credit is no longer satisfied with

increasing demand for more fund, firms turn to bank loans. Unfortunately, small firms maybe rejected because of poor credit evaluation; therefore, bank loans are not accessible and available to all firms.

Short term loans are a business loan for period less than one year afforded by a commercial bank. The borrower must make monthly payments with interest rate to repay the loan (Joy, 1983).

Finally, at the end of section two, and after discussing the capital expenditure and working capital management, The next section present an overview about Amman Stock Exchange, including its establishment and performance.

2.3 Amman Stock Exchange

2.3.1 Establishment of Amman Stock Exchange

Public shareholding companies were established in the early thirties, and their shares were traded in long before setting up the Jordanian Securities Market.

As a result, an unorganized securities market has taken place in the form of non specialized offices. This encourages the government to contemplate the idea of creating a market to regulate issuance and dealing in securities, in a way that would ensure safe, easy and speedy trading.

In 1975, the Central Bank conducted intensive research in support with International Finance Corporation (IFC), to decide whatever to establish securities market or not , and the research result shows that the size of the national economy and the share of private sector justified establishment of Amman Financial Market. Therefore a temporary law No 31 in 1976 was published. (http://www.ase.com.jo)

In 1997, a new securities law, No. 23, is considered as a landmark in Jordan capital market. This law aims to regulate and restructure the market in consistence with international standards by separation of the legislative and supervisory role from the executive role of the capital market in order to safely trade in securities and secure transparency

As a result of this law, three new institutions were established instead of Amman Financial Market (AFM): (http://www.ase.com.jo).

1- Amman Stock Exchange (ASE) plays the executive role.

2- Securities Depository Center (SDC) plays the executive role.

3- Jordan Securities Commission (JSC) plays the supervisory and legislative role.

2.3.2 Amman Stock Exchange Performance

2.3.2.1 Market Capital

The following table (2.1) shows the market capital for companies listed in Amman Stock Exchange in each sector for the period from 2005 to2013.

Table (2.1)
The Market Capitalizations in Amman Stock Exchange by Sectors for 2005-2013(JD million)

Year	Financial Sector		Industrial Sector		Services Sector		Total Market Capitalization (JD)	Percentage change %
	Market Capitalization	Sector Contribute (%)	Market Capitalization	Sector Contribute (%)	Market Capitalization	Sector Contribute (%)		
2005	19,346.1	72.5	4,020.9	15.1	3,300.2	12.4	26,667.1	104.6
2006	14,669.8	69.6	3,525.7	16.7	2,882.8	13.7	21,078.2	-21.0
2007	18,921.5	64.8	6,202.1	21.2	4,090.6	14.0	29,214.2	38.6
2008	15,500.6	61.0	6,276.1	24.7	3,629.6	14.3	25,406.3	-13.0
2009	12,558.5	55.7	6,276.4	27.9	3,629.6	16.1	22,526.9	-11.3
2010	11,742.0	53.7	6,381.0	29.2	3,735.0	17.1	21,858.2	-3.0
2011	9,847.0	51.1	5,944.0	30.8	3,481.0	18.1	19,272.8	-11.8
2012	9,584.0	50.1	6,159.0	32.2	3,398.0	17.8	19,141.5	-0.7
2013	10,562.0	57.9	4,395.0	24.1	3,276.0	18.0	18,233.49	-4.7

Source: prepared by the researcher depending on Amman Stock Exchange website.

As shown in table (2.1); in 2006, the capital market growth is negative, and then in 2007 the growth became positive by 38.6%. As for the period from 2008-2009 the capital market growth again returned to negative due to the financial crisis which may lead to firms failure, and exit from the stock exchange market. During the period of 2010 -2013 the market capital also shows a negative performance due mostly to external factor belong to political instability of neighborhood countries, and to the decrease in the number of listed firms in Amman Stock Exchange, due to the delisting of 23 firms during the year 2011. On the other hand, the market capital by the sectors classification shows that the financial sector is the most contributing sector among others, which consists mostly from banks that have relatively a large capital. While the industrial sector is the second, then services sector is the last for all years (http://www.alghad.com).

2.3.2.2 Volume Traded in Amman Stock Exchange

Table (2.2) shows the volume traded by sectors for companies listed in Amman Stock Exchange in each sector for the period from 2005-2013 in addition of contribution of each sector in million.

Table (2.2)

Trading Volume at Amman Stock Exchange by new sector classification for the period 2005-2013 (JD million).

Year	Financial Sector		Industrial Sector		Services Sector		Value traded (JD)	Percentage change %
	Value traded	Sector Contribute (%)	Value traded	Sector Contribute (%)	Value traded	Sector Contribute (%)		
2005	13,200.7	78.2	2,474.4	14.7	1,195.9	7.1	16,871	334.8
2006	11,570.2	81.4	1,697.5	11.9	942.2	6.6	14,210	-15.8
2007	8,779.2	71.1	1,910.9	15.5	1,658.0	13.4	12,348	-13.1
2008	9,638.9	47.4	5,256.8	25.9	5,422.2	26.7	20,318	64.5
2009	6,363.8	65.8	1,270.7	13.1	2,030.8	21.0	9,665	-52.4
2010	4,174.1	62.4	771.2	11.5	1,744.7	26.1	6,690	-30.8
2011	1,757.4	61.7	516.9	18.1	576.0	20.2	2,850	-57.4
2012	1,189.5	60.1	385.4	19.5	403.9	20.4	1,979	-30.6
2013	2,221.4	73.4	397.7	13.1	408.1	13.5	3,027	53.0

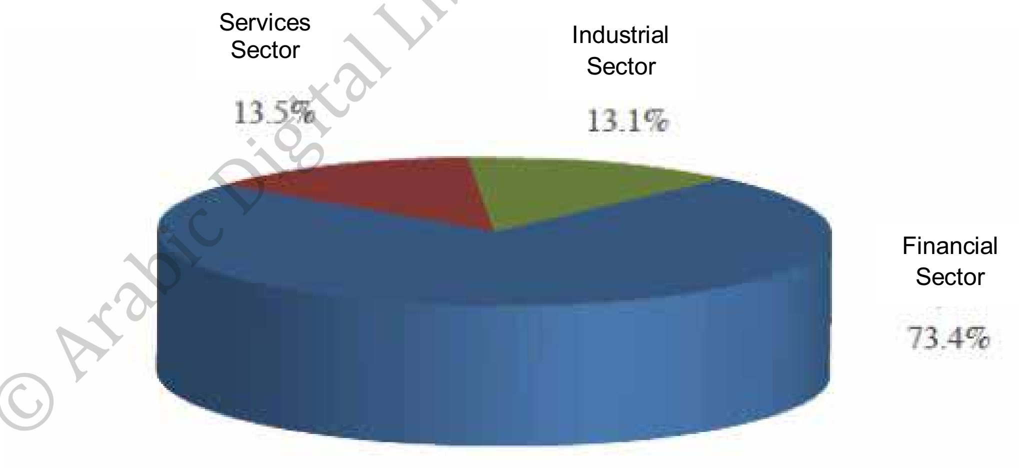
Source: prepared by the researcher depending on Amman Stock Exchange website.

As shown in table (2.2), in 2006 and 2007, that the volume traded growth is negative due to the global financial crisis, which effect to the most firms in Jordan and led to increase the failure rate of firms, that face difficulties to excess the capital market to service during the financial crisis. And also lead to the decrease in number of firms listed in Amman Stock Exchange. In 2008, the growth rate recovered and become positive by 64.5%, But then in period from 2009 to 2012, the volume traded growth again returned to negative due to the risk of political instability of neighborhood countries, and to the decrease in number of listed firms in Amman Stock Exchange. At the last, in 2013, the volume traded became positive. On the other hand, the volume traded by the sectors classification shows that the financial sector is the most contributing sector among others

for all years, which consists mostly from banks that have relatively a large capital, and also high profit rate compared to other sectors. While the second sector is the industrial then at last the services sector for the period from 2006 to 2007. But in the following years from 2008 to 2013, the services sector takes the second place and industrial sector comes last as shown in figure (2.5), this may due to due to the delisting of some of industrial firms in Amman Stock Exchange (http://www. alghad.com).

Figure (2.5)

Trading Volume at Amman Stock Exchange by new sector classification for the year 2013 (JD %).



Source: Amman Stock Exchange website. (The annual report for the year 2013) pp20.

This chapter contains the most fundamental issues related to working capital management and capital expenditures, while the next chapter presents the most important literature that is related to the research in different countries, the developed countries and developing countries.

Chapter Three

Literature Review

3.1 Introduction

3.2 Literature in Developed Countries

3.3 Literature in Developing Countries

3.4 What Distinguishes this Study from Previous Studies?

Chapter Three

Literature Review

3.1 Introduction

The importance of working capital management is not new to finance literature; however, the relationship between capital expenditure and working capital receives little attention. The majority of prior literature reveals that there exists a significant relation between capital expenditure and working capital management by using different variables selection for analysis.

Although developed countries have had precedence in studying this topic, there are many studies among developing countries that have risen in the recent year. Working capital management studies may vary between developed and developing countries according to the different economic characteristics, law, region, and degree of risk. Therefore, the next section reviews previous literature conducted about the impact of capital expenditure on working capital management divided into parts: studies in developed countries, and in developing countries. Finally, the last section discusses what distinguishes this study from previous studies.

3.2 Literature in Developed Countries

An important study conducted by **Chiou and Cheng (2006)**, investigated the determinants of working capital management by using net liquidity balance (NLB) and working capital requirement (WCR) as proxy for working capital management. The sample includes data of 19180/firms quarter date of companies in Taiwan over the period 1996-2004. The result indicates that by using OLS regression, that the most two effective independent variables in working capital management are the operating cash flow which affects positively in (NLB) and negatively in (WCR), and debt ratio, which affects negatively in both (NLB and WCR). The other independent variables that have a week influence on working capital management are growth, size, performance and industry.

Using panel data analysis, **Hyung (2007)** investigated the determinants of cash holding of Korea manufacturing corporate over the period from 1991-2003. The study employs panel regression of 315 firms to estimate the relation between variables, the results suggest that there is a significant shift in firms behavior of cash holding after the foreign currency crisis. The result indicates that the determinants of cash holding after crisis are growth opportunity and foreigners shares, while before crisis the determinants included growth opportunity, leverage, liquidity constraints, size, and dividend policy.

Using sample drawn from Canada firms, **Gill(2011)** examined the factor that influenced the working capital requirement(WCR) , the data collected from 166 firms listed on Toronto stock exchange in Canada for the period from 2008-2010. The study tested the effect of (WCR) in both manufacturing and service industry separately by using the ordinary least square (OLS) model, the result indicates that operating cycle, return on assets, leverage, Tobin's q, and size effect on working capital requirement (WCR) in manufacturing industry, while the factors operating cycle, return on assets, sale growth, internationalization of firms, and firms size effect on (WCR) in service industry. The study shows that the result may differ according to the type of industry and country due to different management of working capital.

Another study perspective**, Asker *et al* (2011)** evaluated the difference in investment behavior between the stock market listed public and private firms in USA and Canada comparison used matching between the private and public by find similar pairs in both two firms type based in size and industry, the sample covered the period from 2002 to 2007 and included 36130 firms include both private and public firms. The results show that public firms invested less in comparison with private firms. The finding is consistent with the presence of agency problem between the

managers and many stock market investors due to the separation of ownership and control which lead to invest below the proper level.

Using random and fixed effect analysis, **Manoori and Muhammad (2012)** investigated the factor that determines working capital management in Singapore for 94 industry firms for the period from 2003 to 2010. The analysis used Pooled OLS, Random and Fixed effect model to estimate the cash conversion cycle as a measure of working capital management and used capital expenditure -independent variable- as proxy for macroeconomic condition. The result finds that capital expenditure, operation cash flow and firms size are negatively correlated with working capital management, and indicated that the firms with longer cash conversion cycle are more profitable.

The study of **Naser *et al* (2013)**, employed data from Abu Dhabi Securities Exchange for 30 non-financial companies for the period between (2010-2011) to investigate working capital management. It used cash conversion cycle as proxy for working capital management, where the effective management implies short cycle. The result shows that the most effective factors that influenced working capital management are, size, sales growth, and the level of leverage. The study also shows that leverage in large companies is better than smaller companies due to the power of negotiation over their customers and suppliers; Hence, they can shorten

cash conversion cycle. Also larger companies can increase their sales growth better than small companies, and this increases the profit and liquidity, therefore the cash conversion will be shorter.

A recent study in USA, **Litt (2013)** focused on environmental factors that affect capital expenditures decision in US firms, using sample of 280 US firms for period over 2004 to 2006. The result indicates that firms that practice environmental activities have higher capital expenditure than those do not. The researcher also examines the various types of firms capital expenditures independently and the results also support that environmental activities (such as recycling, environmentally friendly product, pollution prevention) effect capital expenditure.

3.3 Literature in Developing Country

The topic of the working capital management has been the focus of researchers in many developing countries.

An important study conducted by **Appuhami (2008)**, which investigated the impact of firm capital expenditure on their working capital management by using the data collected from 416 industrial listed companies in Thailand Stock Exchange for the period over 2000-2005. The study used net liquidity balance (NLB) and working capital requirement (WCR) as index for working capital measurement, and used pooled regression models for panel data as measurement of the relations in the

study. The results show that capital expenditure has a significant negative impact on working capital requirement and significant positive impact on net liquidity balance. It further shows that operating cash flow, which is one of control variable, has a significant negative relationship with working capital requirements, and a significant positive with net liquidity balance. The result indicates that companies manage their working capital requirements (WCR) efficiently when there is growth opportunities. The other variable which is leverage, market to book value and growth are positive insignificant relationship with both net liquidity balance and working capital requirements.

Another study also by **Appuhami (2009)**, which Examined the relationship between working capital management and capital expenditure (Capex) by using net liquidity balance and working capital requirements as proxy, the difference that distinguished the Appuhami new study from his previous studies that the sample included the services sector, and added new control variable which returned on assets (ROA) to increase the explanatory power. The results consistent with finding of previous research which indicate that capital expenditure have a negative significant relationship with working capital requirements (WCR) and a positive significant relationship in net liquidity balance (NLB). There is also an insignificant relationship of return of assets in both (NLB) and (WCR).

Using sample drawn from Pakistan, **Nazir and Afza (2009)** examined the determining factors that affect working capital requirements of manufacturing firms listed in Karachi Stock Exchange (KSE). The sample included 132 manufacturing firms distributed on 14 industrials sectors for the period 2004-2007. The researcher used working capital requirements as dependent variable, while the independent variable included factors that determine the working capital requirements such as leverage, operating cycle of the firm, level of economic activity, growth, firm size, Tobin's Q, operating cash flow ,return on assets, and industry. The study found that the internal factors, which are leverage, operating cycle, Tobin's Q, ROA, are the most influencing factors on working capital requirements. However the external factor which is industry, also has a influencing effect on working capital requirements.

Another study explored the effect of capital investment and working capital management by **Bellouma (2010)**; for that purpose, the data of 386 companies collected from Tunisian Export Centre for the period from 2001 to 2008 were used. And by using fixed, model the researcher employed (NLB) and (WCR) as dependent variable, while the capital, operating and financial expenditure as independent variables. The findings indicate that working capital requirements and net liquidity balance have respectively negative and positive relationship with capital investment. While the

operating expenditure have a positive significant relations for both (NLB) and (WCR), and financial expenditure has a positive significant relation only with net liquidity balance.

An important study conducted in Jordan by **AL-Shubiri (2011)**, the researcher examined the relationship between two strategies in working capital management which are the aggressive strategy and the conservative strategy and the affect of the strategy type in profitability and risk in working capital, the researcher tried to focus his attention on financial decision making and consider it as an important component of firms financial management. The sample of the research included 14 banks and 59 industrial firms listed in Amman Stock Exchange for period of 2004-2008. The study finds a negative relationship between profitability and working capital aggressive strategy. Also there are some significant proofs that indicate a relationship between working capital practices in banks and return on investment.

In investigating, the impact of working capital management policies on firms value and profitability, **AL-Mwalla (2012)** used a sample of 57 industrial firms listed in Amman Stock Exchange for the period from 2001 to 2009, and showed that following a conservative investment policy has a positive impact on firms value and profitability. However following aggressive financing policy has a negative impact on firms value and

profitability. Also the result shows that growth, firms size, and GDP growth have a positive impact on firms value and profitability with no effect in financial leverage.

Using panel data analysis**, Salehi (2012)** investigated the relationship the between the change in working capital and fixed assets with asset return. The samples included 120 manufacturing listed companies in Tehran Stock Exchange for period 2006 - 2010. To determine the kind of relationship between dependent (assets return) and independent variables (working capital change and fixed assets change) and hypotheses, and to evaluate normality of data respectively, the researcher used Pearson correlation and regression test. The results indicate that there is a positive significant relationship between working capital changes and fixes assets with assets return due to the fact that fixed assets reflect to the firm's productive units which have a significant effect on companies' success in long run.

Another sample drawn from Jordanian industrial firms, **Al-Amarneh (2013)** explored the factor that determined corporate cash holding of 47 Jordanian industrial firms listed in Amman Stock exchange for the period from 2001 to 2010. The study used cash flow, liquid assets, leverage, firm size, growth and dividends payment as independent variable. For the purpose of testing the hypotheses the researcher used random effect

model for panel data. The result shows that cash flow is significantly positive, which means that Jordanian firm in the sample raises their cash holding when there is investment or growth opportunities; however, firms lower their cash holding when liquid assets substitute of cash or when the leveraged is high.

Using panel date analysis, **Celik and Boyacioglu (2013)** explore the effects of investments in fixed capital on working capital management. The data include 141 manufacturing firms in Istanbul stock exchange covering the period from 2007 to 2011. According to the random and fixed effect model and by using (WCR) and (NLB) as dependent variables, the result confirms that the fixed assets expenditure has an important effect on working capital management, and effect negatively in both (WCR) and (NLB).

Using sample drawn from Pakistani firms, **Butt *et al* (2013)** explored the relationship between working capital management and capital expenditure for the nonfinancial firms listed at the Karachi stock exchange in Pakistan. At first, the study analyzed the data of all firms in the sample, and then focused on textile firms which include 80 firms for the period from 2003 to 2010. For this purpose, the researchers used working capital requirement (WCR) as index for measured working capital management. The results indicate that capital expenditure and other variables, which are

leverage, operating cash flow and growth have a significant impact in working capital management, and it impacts negatively in working capital requirement. This means that those firms in presence of growth opportunity try to manage their working capital efficiently, in order to get more liquidity to take advantage of growth opportunity, and incurring capital expenditure.

Another study investigated in relationship between working capital management and capital expenditure in Pakistan by **Ilyas (2014)**, the data for the study include 109 firms listed in Karachi stock market for period over 2006-2010. The study used (NLB) and (WCR) as proxy of working capital measurement. The result shows that there is a positive and significant relationship between (WCR) and capital expenditure, while there is a negative significant relationship with (NLB). The result also proves that working capital management affected the profitability and the liquidity of the firms.

At last, a recent study conducted in Iran by **Ahmadi and Jari (2014)**, the researcher used net liquidity balance and working capital requirements component to examine the relationship between working capital management and capital expenditure in companies listed in Tehran stock exchange for the period (2002-2006). The result shows that there is no relationship between the capital expenditure with the two components of

working capital management, this result indicate that Iran companies prefer to stay in their current state; therefore, companies did not seek for growth opportunities.

Table (3.1) shows the summary of the literature review of both developed and developing countries, which includes 19 studies.

Table (3.1)

Summary of the literature review of both developed and developing countries

No	The study Title	the researcher name	Country of the study	The period of the study	The main results
1	The Determinates of Working Capital Managements	Chiou and Cheng, 2006	Taiwan	1996-2004	-Operating cash flow effect positively in (NLB) and negatively in (WCR). -Debt ratio effect negatively in both (NLB and WCR).
2	Corporate Cash Holding : An Empirical Investigation of Korea Companies	Hyung, 2007	Korea	1991-2003	-The result suggest that there is significant shift in firms behavior of cash holding after the foreign currency crisis. -The determinants of cash holding after crisis are growth opportunity and foreigners shares, while the before crisis the determinants include growth opportunity, leverage, liquidity, constraints, size, and dividend policy.
3	The Relationship between Working Capital Management and Profitability	Gill, 2011	Canada	2008-2010	-The result indicate that operating cycle, return on assets, leverage, Tobin's q, and size effect on working capital requirement (WCR) in manufacturing industry, -The factors operating cycle, return on assets, sale growth, internationalization of firms, and firms size effect on (WCR) in service industry.

4	Comparing the Investment Behavior of Public and Private Firms	Asker *et al*, 2011	U.S.A, Canada	2002-2007	-The results show that public firms invest less in comparison with privet firms. The finding consistent the presence of agency problem between the managers and many stock market investors due to the separation of ownership and control which lead to invest below the proper level.
5	Determinants of Working Capital Management : Case of Singapore Firms	Manoori and Muhammad, 2012	Singapore	2003-2010	-The result found that capital expenditure, operation cash flow and the firms size are negatively correlated with working capital management, also found that the firms with longer the cash conversion cycle are more profitable
6	Factors Influencing Corporate Working Capital Management: Evidence from an Emerging Economy	Naser *et al*, 2013	Abu Dhabi	2010-2011	-The result shows that the most effective factors that influenced working capital management are, size, sales growth, and the level of leverage
7	Why Do Firms Invest in Capital Expenditure? Evidence from Environmental Activities	Litt, 2013	U.S.A	2004-2006	-The result indicate that firms practice environmental activities have higher capital expenditure than those that do not.
8	The Impact of Firms Capital Expenditure on Working Capital Management: An Empirical Study across Industries in Thailand	Appuhami, 2008	Thailand	2000-2005	-The results show that capital expenditure has a significant negative impact on (WCR)and significant positive impact in (NLB), -The operating cash flow has a significant negative relationship with (WCR), and significant positive with (NLB). - The other variable which is leverage, market to book value and growth are positive insignificant relationship with both (NLB) and (WCR).

9	Corporate Investments and Dual Role of Working Capital: Evidence from Thiland	Appuhami, 2009	Thailand	2004-2007	-The results indicate that capital expenditure have significant negative relationship with (WCR) and significant positive in (NLB). -There also insignificant relationship of return of assets in both (NLB)and(WCR)
10	Working Capital Requirements and Determining Factors in Pakistan	Nazir and Afza, 2009	Karach	2004-2007	-The study finds that the internal factors, which is leverage, operating cycle, Tobin's q, ROA, are most factors an influencing on WCR -The external factor which is industry, is also have a influencing effect on (WCR).
11	Effects of Capital Investment on Working Capital Management: Evidence on Tunisian Export SMEs	Bellouma, 2010	Tunis	2001-2008	-The findings indicate that (WCR)and(NLB)have respectively negative and positive relationship with capital investment. -The (OPEX) have a significant positive relations for both (NLB) and (WCR). -Financial expenditure have positive significant relation only in (NLB).
12	The Effect of Working Capital Practices on Risk Management: Evidence from Jordan	AL-Shubiri, 2011	Jordan	2004-2008	-The study finds a negative relationship between profitability and working capital aggressive strategy. -There is some significant proof that indicates a relationship between working capital practices in banks and return on investment.
13	The Impact of Working Capital Management Policies on Firms Profitability and Value: The Case of Jordan	AL-Mwalla, 2012	Jordan	2001-2009	-The results shows that following a conservative investment policy has a positive impact on firms value and profitability. However following aggressive financing policy has a negative impact on firms value and profitability. -The result show that growth, firms size, and GDP growth have positive impact on firms value and profitability with no effect in financial leverage

14	The Relation of Working Capital and Fixed Assets	Salehi, 2012	Tehran	2006-2010	-The results indicate that there is a significant positive relationship between working capital changes and fixed assets with assets return due that fixed assets reflect to the firm's productive units which have significant effect on companies' success in long run.
15	"Why do Jordanian Firms Hold Cash? An Empirical Examination of The Industrial Companies Listed in ASE	Al-Amarneh, 2013	Jordan	2001-2010	-The result show that cash flow is significantly positive, which mean that Jordanian firm in the sample rise their cash holding when there is investment or growth opportunities, however firms low their cash holding liquid assets substitute with cash or when the leveraged is high
16	The Impact of Assets Expenditures on Working Capital Management: An Application on Manufacturing Enterprises in Istanbul Stock Exchange	Celik and Boyacioglu, 2013	Istanbul	2007-2011	-The result confirms that the fixed assets expenditure has an important effect on working capital management, and effect negatively in both (WCR)and (NLB).
17	Capital Expenditure and Working Capital Management: Empirical Evidence from Non-Financial Firms Listed at Karachi Stock Exchange	Butt *et al*, 2013	Pakistan	2003-2010	-The results indicate that capital expenditure and other variables, which is leverage, operating cash flow and growth has a significant and impact in working capital management, and its impact negatively in(WCR). This mean those firms in presence of growth opportunity try to mange there working capital efficiently, so they can get more liquidity to take advantage of growth opportunity, and incurring capital expenditure.

18	The impact of Capital Expenditure on Working Capital Management of Listed Firms (Karachi Stock Exchange) in Pakistan	Ilyas, 2014	Karachi	2006-2010	-The result shows that there is positive and significant relationship between (WCR) and capital expenditure -There is a negative and significant relationship with (NLB). The result proved that working capital management affects the profitability and the liquidity of the firms.
19	The Relationship Between Corporate Investments and Components of Working Capital: An Iranian Case	Ahmadi and Jari, 2014	Tehran	2002-2006	-The result show that there is no relationship between the capital expenditure with the two component of working capital manage

Source: prepared by the researcher

3.4 What Distinguishes this Study from Previous Studies?

In summary, the majority of above studies tend to indicate that working capital management has an impact upon capital expenditure, Hence the current study adds to previous literature, and may be the first of its type that uses sample of Jordanian company listed in Amman Stock Exchange (ASE) with different sectors, industrial and services sectors, using Net liquidity Balance (NLB) and Working Capital Requirement (WCR) as proxy of working capital management, and also using eight different independents variables. As to researcher knowledge no such research exists.

The following chapter provides the research methodology data analysis.

Chapter Four

Research Methodology

Chapter Four

Research Methodology

4.1 Introduction

This chapter discusses the methodology used to investigate the relationship between the capital expenditure and working capital management of manufacturing and services firm listed on Amman Stock Exchange (ASE), over the period 2006 to 2013.

Furthermore, this chapter clarifies the methodology starting from population of the study through the chosen sample and the sources of data, and finally discusses the variable under investigation, model, and also discusses the measurement of variables.

4.2 Population and Sample of the Study:

The population of the study includes all manufacturing and services firm listed in Amman Stock Exchange (ASE) for the period (2006-2013).The final sample of the study has to satisfy the following criteria:

1. The selected firms should have all data required to calculate the study variables over the period 2006 to 2013.
2. The selected firms should be listed in the Amman Stock Exchange over the period 2006 to 2013.

After applying those criteria the final sample consists of both (69) industrial and services firms as shown in table (4.1). The sample also has been mentioned in the details in appendix (1).

Table (4.1)

List of sample companies classification in by sector

Code	**sector type**	**number of company include in sample**
2	**Services Sector**	**Total 27**
201	Health Care Services	2
202	Educational Services	5
203	Hotels and Tourism	5
204	Transportation	5
205	Technology and Communication	2
206	Media	1
207	Utilities and Energy	3
208	Commercial Services	4
3	**Industrial Sector**	**Total 42**
301	Pharmaceutical and Medical Industries	5
302	Chemical Industries	7
303	Paper and Cardboard Industries	2
304	Printing and Packaging	1
305	Food and Beverages	6
306	Tobacco and Cigarettes	1
307	Mining and Extraction Industries	9
308	Engineering and Construction	6
309	Electrical Industries	2
310	Textiles, Leathers and Clothing's	3
311	Glass and Ceramic Industries	0
	Total	**69**

Source: prepared by the researcher depending on Amman Stock Exchange website

4.3 Data Collection:

The sources of data for the purposes of statistical analysis represented by firms yearly financial report (balance sheet, income statement and cash flow) which published in Amman Stock Exchange (ASE) electronic website for both manufacturing and services sector. As for the theoretical part, it has been covered from books, previous studies, articles, and network data base.

4.4 Statistical Methods of the study:

the researcher used the Panel data analysis to achieve the objective of the study, which refers to multi-dimensional data by using the characteristics of both Cross-Sectional and Time Series Data, Panel data also take into consideration the impact of individual factors (the firms character) as well as the time specific effects in regression modeling.

Panel Data usually estimate either by Fixed effect model (FEM), or by Random effect model (REM). Gujarati (2003) explained that the Fixed effect model allow the intercept in the regression to differ among individuals (firms), and this means that each individual, or cross sectional unit may have special characteristics of its own, which correlated with dependent variable. On the other hand, the Random effect model unlike the Fixed effect model, where the intercept of individual unit is random with a

constant mean value, which expressed as deviation from constant mean value, and uncorrelated with dependent variables.

The researcher used the Hausman Test to select the appropriate model (Random or Fixed effect). And also used variance inflation factor test (VIF) to check for Multicollinearity problem, which means that the variable could be considered as a linear combination of other independent variables.

Another two tests are used on study, as F test in order to identify the model that best fits the population from which the data were sampled, and T test to measure the statistical significance of the coefficients for the study variables.

4.5 Models and hypotheses of the Study:

After reviewing the literature of capital expenditure and working capital management, and to accomplish the objectives of the study as mentioned in the second chapter, the researcher relies on the following hypotheses:

H_1: There is significant negative relationship between capital expenditure (CAPEX) and net liquidity balance (NLB).

H_{1a}: There is a negative significant relationship between operating expenditure (OPEX) and net liquidity balance (NLB).

H_{1b}: There is a negative significant relationship between financial expenditure (FIEX) and net liquidity balance (NLB).

H_{1c}: There is a negative significant relationship between operating cash flow operating (OCASH) and net liquidity balance (NLB).

H_{1d}: There is a negative significant relationship between debt ratio (DR) and net liquidity balance (NLB).

H_{1e}: There is a negative significant relationship between sales growth (SG) and net liquidity balance (NLB).

H_{1f}: There is a negative significant relationship between market to book value ratio(M/B) and net liquidity balance (NLB).

H_{1g}: There is a negative significant relationship between return on assets (ROA) and net liquidity balance (NLB).

H_2: There is a negative significant relationship between capital expenditure (CAPEX) and working capital requirement (WCR).

H_{2a}: There is a negative significant relationship between operating expenditure (OPEX) and working capital requirement (WCR).

H_{2b}: There is a negative significant relationship between financial expenditure (FIEX) and working capital requirement (WCR).

H_{2c}**:**There is a negative significant relationship between operating cash flow operating (OCASH) and working capital requirement (WCR).

H_{2d}**:**There is a negative significant relationship between debt ratio (DR) and working capital requirement (WCR).

H_{2e}**:**There is a negative significant relationship between sales growth (SG) and working capital requirement (WCR).

H_{2f}**:**There is a negative significant relationship between market to book value ratio(M/B) and working capital requirement (WCR).

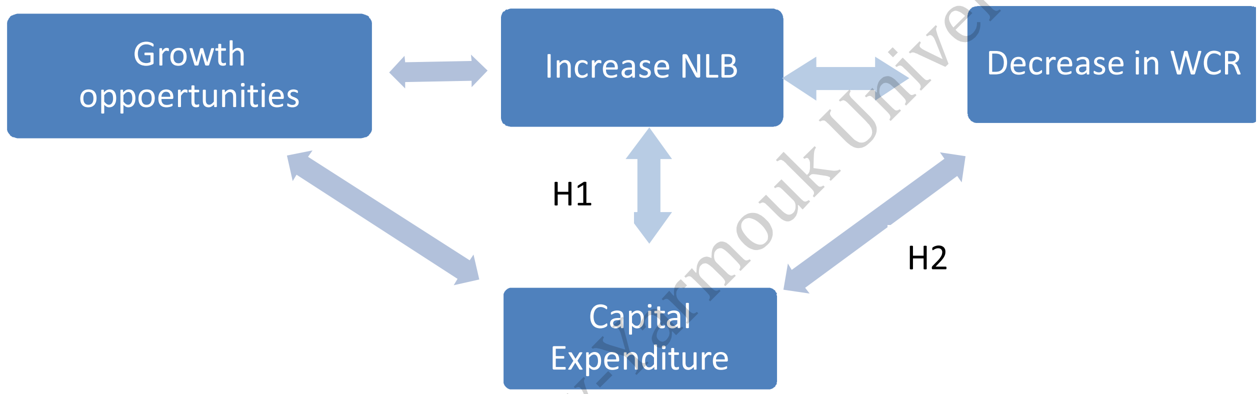
H_{2g}**:**There is a negative significant relationship between return on assets (ROA) and working capital requirement (WCR).

The following framework adopted in this study in figure (4.1), explains the relationship between capital expenditure with (NLB) and (WCR), that when corporations have growth opportunities, they tend to increase the need for acquired fixed assets, especially if they are already operating at full capacity. Therefore, capital expenditure (CAPEX) increases and in order to support that growth, which will increase the cash balance, leading to positive relationship between capital expenditure and net liquidity balance (NLB). Also to increase the cash balance, the length of payments of loans increase, and the collection of receivables accelerates;

therefore, the relationship between capital expenditure and working capital requirement (WCR) will be negative.

figure(4.1)

the theoretical frame work adopted in this study



source: Appuhami (2008, pp17)

As for the following structures of the models previously applied by Shulman and Cox(1985), and then by Appuhami (2008), and Butt *et al* (2013), and to test the hypotheses, the researcher estimates the following two main regression models, which have been used to examine the effect of capital expenditure on working capital management, the result of both models is reported for industrial and services sector separately.

$$\mathbf{NLB_{it}/TA} = \beta_0 + \beta_1\, OPEX_{it}/TA + \beta_2 FIEX_{it}/TA + \beta_3 CAPEX_{it}/TA + \beta_4\, M/B_{it} + \beta_5\, SG_{it} + \beta_6\, DR_{it} + \beta_7\, OCSH_{it}/TA + \beta_8\, ROA_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots \mathbf{(1)}$$

$$\mathbf{WCR_{it}/TA} = \beta_0 + \beta_1\, OPEX_{it}/TA + \beta_2\, FIEX_{it}/TA + \beta_3 CAPEX_{it}/TA + \beta_4\, M/B_{it} + \beta_5\, SG_{it} + \beta_6 DR_{it} + \beta_7 OCSH_{it}/TA + \beta_8\, ROA_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots \mathbf{(2)}$$

Where:

NLB/TA: represents net liquidity balance / total assets.

WCR/TA: represents working capital requirement/ total assets.

OPEX/TA : represents operating expenditure/total assets.

FIEX/TA: represents financial expenditure/total assets.

CAPEX/TA: represents capital expenditure/total assets.

M/B: represents market to book value ratio.

DR: represents debt ratio.

SG: represents sales growth.

OCASH/TA: represents operating cash flow in firm /total assets.

ROA: represents return on total assets.

β_0 , β_1… $\beta_{8:}$ are coefficient values.

i: represents the number of firms =1,2….69 firms.

t: represents the period of time = 1,2,….8 years.

4.6 Measurements of Variables

4.6.1 Dependent Variables:

In this study, the researcher uses two dependent variables, which represent the two elements of net working capital, and control the size affect of the firms, these variables are divided by total assets (Nazir and Afza,2009).

- **Net Liquidity Balance (NLB/TA):**

NLB/TA symbolizes the difference between current assets and current liabilities under financial item which calculated as mentioned in (Appuhami, 2009) study.

(cash and cash equivalents + short term investment) – (short term debt + commercial paper payable + long term debt year term)/total assets.

Where: long term debt year term mean the accrued part of long term loans.

- **Working Capital Requirements(WCR/TA):**

WCR/TA represents the difference between current assets and current liabilities under nonfinancial item which calculated as mentioned in (Appuhami, 2009) study.

(accounts receivable + inventories) – (account payable + Accrued Payables + other payable)/total assets.

4.6.2 Independent Variable:

- **Capital Expenditure (CAPEX/TA):**

CAPEX/TA represents the expenditure that incurred by the company for "acquisition and upgrading physical assets", such as building land and equipment (Appuhami, 2008, pp16). and divided by total assets to control the size effect. It is calculated using the following equation.

capital expenditure = (net book value of assets at the end of term – net book value of assets at first term + depreciation) / Total assets. (Butt *et al* 2013).

- **Operating Expenditure (OPEX/TA):**

According to Appuhami (2009, pp16) operating expenditure "Is the cost of ongoing operation, product or system", which includes wages salaries and facilities expenses, such as electricity, rent. Operating expenditure directly obtained from the income statement (Butt *et al* 2013) and divided by total assets to control the size effect. It is calculated using the following formula

Operating Expenditure = (Operating Expenditure/ Total Assets).

- **Financial Expenditure (FINEX/TA):**

FINEX/TA recognizes as the cost incurred on debt capital, and interest incurred in bank loan. Which obtains from the income statement (Appuhami, 2009), and divided by total assets to control the size effect. It is calculated using the following formula.

Financial Expenditure = (Financial Expenditure/ Total Assets).

4.6.3 Control Variables:

- **Sale Growth Ratio(SG):**

Sale gowth represents the sales percentage growth of the firm from year to another calculated by the following formula:

Sales Growth = (Current year Sales – Previous Year Sales) / Previous Year Sales.

- **Debt Ratio(DR):**

The debt proxy for leverage. It measures the percentage of total assets financed by creditors. It is calculated using the following formula (Gill and Biger 2010).

Debt Ratio = Total Liabilities / Total Assets.

- **Market to Book Value Ratio(M/B):**

Market to book value ratio measure the market value of the company relative to it book or accounting value.

This ratio used by dealer to determine if the stock overvalues or undervalues, if the stock in overvalued, the stock price is expected to fall, and the price expected to rise if it undervalued. It is calculated using the following formula.

Market to Book Value Ratio = Share Price of the Stock / Book Value per Share

Where:

Book Value per Share = Total of Shareholder Equity / Total Outstanding Shares

- **Operating Cash Flow (OCASH/TA):**

OCASH/TA defined as the generated cash of the company normal business operation, it indicates if the company generates sufficient (positive)

cash flow to grow and maintain its operation; otherwise, it may require external financial if the operating cash flow is negative. operating cash flow obtained directly from the cash flow statement, and divided by total assets to control the size effect (Appuhami, 2009). It is calculated using the following formula.

Operating Cash Flow = (Cash Flow received from business main activity/ Total Assets).

- **Return on Total Assets Ratio (ROA)**:

This ratio is helpful to know if the company is efficient in using assets to generate earnings, and whether if the company is profitable in relative to its total assets. It is calculated using the following formula.

Return on Assets = Net Income / Total Assets.

4.7 Limitation of the Study.

It is important to mention some limitations of the study that might constrain applying the result of the sample to the population of the study.

1. Different accounting policies from one company to another may effect the validity of the results.
2. The data of the year 2013 is obtained from each financial statement of the firms sample by the researcher which consumed a long time, due to delay in Amman Stock Exchange website in preparation of financial statements.

Also the time has been spent to verify the data, when mismatching occurs in reporting by Amman Stock Exchange and the data published in the financial statement of the firms included in the sample.

Chapter five

Data analysis

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5.3.1 The Variance Inflation Factor Test for Industrial Sector

5.3.1 The Variance Inflation Factor Test for Services Sector

5.4 Results of the Study Model

5.4.1Results of Industrial Sector (Model A)

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Model(A.2)The Results using Working Capital Requirement (WCR) as Dependent Variable.

Chapter five

Data analysis

5.1 Introduction

The following section presents the statistical analysis and deal with descriptive statistics analysis, and the result of estimating of the regression equation using Panel data, which can be estimated by using a Random effect and Fixed effect for each sector independently (Industrial and services sectors). However, the analysis considers only the model that is proved as appropriate model for Panel data, and also provide accurate result, through the result of Hausman Test. And since capital expenditure and working capital management change across time from one firm to another, Panel Data Analysis is considered as better estimating for the regression equation than Pooled Analysis.

5.2 Descriptive statistics of the study variables

The following part shows the descriptive statistics of the study variables of Industrial and services sectors independently, for the period between 2006 to 2013, which is represented by the mean and the standard deviation, in addition of the highest and the lowest value of the variables.

5.2.1 Descriptive statistics for Industrial Sector

Table (5.1) shows the descriptive statistics of the study variables for Industrial sector for the period between 2006 to 2013.

Table (5.1)

The Results of Descriptive Statistics for Industrials Sector

Variable	Mean	SD	Min	Max
NLB/TA	-4.83	0.1897	-59.56	55.07
WCR/TA	25.55	0.1728	-4.52	82.26
OPEX/TA	54.32	0.3390	4.40	196.85
FIEX/TA	1.20	0.0122	0	5.41
CAPEX/TA	3.33	0.0754	-35.90	50.14
OCASH/TA	5.05	0.1098	-32.42	43.82
DR	32.04	0.1933	1.47	94.47
GR	7.30	0.4837	-1	629.68
M/B	1.37	1.0316	0.05369	7.4736
ROA	2.24	0.0967	-60.0	43.29

Source: prepared by the researcher depending on STATA software.

The table indicates that:

- **Net Liquidity Balance / Total Assets (NLB/TA):**

The results have an average of (-4.8%), with standard deviation of (0.189). This percentage varies between (-59.5%) as a minimum, and (55%) as maximum. The negative average may indicate that firms suffer from shortage of liquidity, with low growth opportunity firms tend to hold minimum level of cash balance.

- **Working Capital Requirement/ Total Assets (WCR/TA):**

The results have an average of (25.5%), with standard deviation of (0.172). This percentage varies between (-4.5%) as a minimum, and

(82.2%) as maximum. This may suggest that firms have more inventory and account receivable balance more than account payable balance. This may be due to the fact that firms following loose or more flexible collection policy of the receivable to maintain customers in bad economic condition, which mean a longer credit period, and suggests that industrial firms usually require more working capital than services firms.

- **Operating Expenditure/Total Assets (OPEX/TA):**

The results have an average of (54.3%), with standard deviation of (0.33). This percentage varies between (4.40%) as a minimum, and (196.8%) as maximum. The reason behind the disparity is due to the difference in firms cost of raw materials, and salary of employees.

- **Financial Expenditure/Total Assets (FIEX/TA):**

The results have an average of (1.2%), with standard deviation of (0.0122). This percentage varies between (0%) as a minimum, and (5.41%) as maximum. The reason behind the disparity is due to the difference in firms dependences in debt financing, and the ability to get loans, and in addition the credit rating of the firms.

- **Capital Expenditure/Total Assets (CAPEX/TA):**

The results have an average of (3.33%), with standard deviation of (0.075). This percentage varies between (-35.9%) as a minimum, and (50%) as maximum. the reason behind the disparity is due to the different growth opportunities, investment opportunities available, the ability to get

loans, and in addition the economy condition. The low average of CAPEX may suggest that it is affected by the low growth and investment opportunities.

- **Operating Cash Flow in Firm /Total Assets (OCASH/TA):**

  The results have an average of (5%), with standard deviation of (0.109). This percentage varies between (-32.%) as a minimum, and (43%) as maximum.

- **Debt Ratio (DR):**

  The results have an average of (32%), with standard deviation of (0.19). This percentage varies between (1.47%) as a minimum, and (94.4%) as maximum. The reason behind the disparity is due to the difference in firms dependences in debt financing, and the ability to get loans, and in addition the economy condition as whole and the credit rating of the firms.

- **Sales Growth (GR):**

  The results have an average of (7%), with standard deviation of (0.483). This percentage varies between (-100%) as a minimum, and (629%) as maximum. The reason behind the disparity is due to the ability to obtain financing, degree of profitability, and investment opportunities.

- **Market to Book Value Ratio (M/B):**

  The results have an average of (1.37), with standard deviation of (1.03). This percentage varies between (.053) as a minimum, and (7.47) as maximum. This ratio used by dealer to determine if the stock overvalues or

undervalues, If the stock in overvalued (lager that 1), the stock price is expected to fall, and implies that investors except that firms will generate more profit, and create more value from assets.

- **Return on Assets (ROA):**

The results have an average of (2%), with standard deviation of (0.09). This percentage varies between (-60%) as a minimum, and (43%) as maximum. The reason behind the disparity is due to the different size of the firms, and investment opportunities available to them.

5.2 Descriptive statistics for Services Sector

Table (5.2) shows the descriptive statistics of the study variables for services sector for the period between 2006 to 2013.

Table (5.2)

The Results of Descriptive Statistics for Services Sector

Variable	Mean	SD	Min	Max
NLB/TA	4.76	0.1707	-31.95	55.36
WCR/TA	5.82	0.1462	-30.56	71.01
OPEX/TA	35	0.2479	0.03	125.94
FIEX/TA	0.99	0.0102	0	4.29
CAPEX/TA	5.09	0.0846	-16.08	71.19
OCASH/TA	8.98	0.1066	-27.98	39.73
DR	33.78	0.2015	4.78	91.85
SG	11.88	0.4614	-55.18	513.43
M/B	1.912	1.034	0.047	5.448
ROA	5.43	0.0824	-25.35	36.02

Source: prepared by the researcher depending on STATA software.

The table indicates that:

- **Net Liquidity Balance / Total Assets (NLB/TA):**

The results have an average of (4%), with standard deviation of (0.17). This percentage varies between (-31%) as a minimum, and (55%) as maximum. The positive average may indicate that firms have sufficient liquidity, which is due to relatively higher growth opportunity than industrials firms, therefore services firms tend to hold more cash balance to seek growth opportunities.

- **Working Capital Requirement/ Total Assets (WCR/TA):**

The results have an average of (5%), with standard deviation of (0.146). This percentage varies between (-30%) as a minimum, and (71%) as maximum. As shown, services firm have less working capital than industrials firm, this is due that servicer firms usually require less working capital for little or no inventory.

- **Operating Expenditure/Total Assets (OPEX/TA):**

The results have an average of (35%), with standard deviation of (0.247). This percentage varies between (3%) as a minimum, and (125%) as maximum. As shown, industrials firms usually require more operating expenditures that are due to the cost of raw materials and the production process. While the services firms have little or no inventories.

- **Financial Expenditure/Total Assets (FIEX/TA):**

The results have an average of (0.99%), with standard deviation of (0.01). This percentage varies between (0%) as a minimum, and (4.2%) as

maximum. The reason behind the disparity is due to the difference in firms dependences in debt financing, and the ability to get loans, and in addition the credit rating of the firms.

- **Capital Expenditure/Total Assets (CAPEX-TA):**

The results have an average of (5%), with standard deviation of (0.08). This percentage varies between (-16%) as a minimum, and (71%) as maximum. the reason behind the disparity is due to the different growth opportunities, investment opportunities available, the ability to get loans, and in addition the economy condition. As shown, the service firms have higher capital expenditure than industrials firms, due to higher growth and investments opportunities.

- **Operating Cash Flow in Firm /Total Assets (OCASH-TA):**

The results have an average of (8%), with standard deviation of (0.106). This percentage varies between (-27.%) as a minimum, and (39%) as maximum. As shown, the services firms tend to generate more cash flow from their operations than industrial firms to increase the liquidity to seek growth opportunities.

- **Debt Ratio (DR):**

The results have an average of (33%), with standard deviation of (0.201). This percentage varies between (4%) as a minimum, and (91%) as maximum. The reason behind the disparity is due to the difference in firms

dependences in debt financing, and the ability to get loans, and in addition the economy condition as whole and the credit rating of the firms.

- **Sales Growth (GR):**

The results have an average of (11%), with standard deviation of (0.461). This percentage varies between (-55%) as a minimum, and (513%) as maximum. The reason behind the disparity is due to the ability to obtain financing, degree of profitability, and investment opportunities. As shown, the services firms have higher sales growth than industrials firms, which lead to increase the liquidity to seek growth opportunities, and which also lead to increase in capital expenditures.

- **Market to Book Value Ratio (M/B):**

The results have an average of (1.912), with standard deviation of (1.03). This percentage varies between (0.047) as a minimum, and (5.448) as maximum. This ratio used by dealer to determine if the stock overvalues or undervalues, If the stock in overvalued (lager that 1), the stock price expects to fall, and implies that investors except that firms will generate more profit, and create more value from assets.

- **Return on Assets (ROA):**

The results have an average of (5%), with standard deviation of (0.082). This percentage varies between (-25%) as a minimum, and (36%) as maximum. The reason behind the disparity is due to the different size of

the firms, and investment opportunities available to them. As shown, the services firms have higher return on assets ratio that may be due to higher growth opportunities available for them.

5.3 The Variance Inflation Factor Test (VIF).

Variance Inflation Factor test (VIF) clarifies the degree to which each independent variable explains other independent variables. And to affirm the problem of multicollinearity for both industrial and services sectors independently. This test is conducted in order to make sure that the problem of multicollinearity is not there, which considers as a condition of regression.

5.3.1 The Variance Inflation Factor Test for Industrials Sector.

Table (5.3) shows the results indicate that VIF factor for the study variables shows the absence of multicollinearity problem for industrial sectors, because the VIF factor is less than 10 for all variables.

Table (5.3)
The Results of (VIF) Test for Industrials Sector

Variable	VIF	1/VIF
DR	1.83	0.54731
FINEX/TA	1.82	0.548135
ROA	1.53	0.653705
OCF/TA	1.33	0.753727
M/B	1.24	0.806795
SG	1.12	0.894318
OPEX/TA	1.09	0.916688
CAPEX/TA	1.07	0.931409
Mean VIF	1.38	

Source: prepared by the researcher depending on STATA 12 software.

5.3.2 The Variance Inflation Factor Test for Services Sector.

Table (5.4) shows the results indicate that VIF factor for the study variables show the absence of multicollinearity problem for services sector, because the VIF factor is less than 10 for all variables.

Table (5.4)

The result of (VIF) test for Services Sector

Variable	VIF	1/VIF
ROA	2.19	0.457659
OCASH/TA	1.82	0.549442
DR	1.65	0.604773
FINEX/TA	1.51	0.660491
OPEX/TA	1.32	0.757288
M/B	1.26	0.796677
SG	1.09	0.914107
CAPEX/TA	1.08	0.927415
Mean VIF	1.49	

Source: prepared by the researcher depending on STATA 12 software

5.4 The Results of the Study Model

This part presents separately the result of the study models analysis for each industrial and services sector that are used. In addition to that, the researcher relies on the Hausman Test to choose the best model for the analyzing the result.

5.4.1 The Results of Industrial Sector (Model A).

This part presents the result of models analysis for industrial sector only for both working capital components, which are net liquidity balance (NLB) and working capital requirements (WCR).

Model(A.1)The Result using Net Liquidity Balance (NLB) as Dependent Variable.

The result of (5.5) table shows the result of estimated of Net Liquidity Balance (NLB) component by Fixed effect model, where the value of Hausman Fixed test is at statistical level (5%).

Table (5.5)

Model(A1) Result using Fixed Effect Model for Industrials Firms

$NLB_{it}/TA = \beta_0 + \beta_1\ OPEX_{it}/TA + \beta_2 FIEX_{it}/TA + \beta_3 CAPEX_{it}/TA + \beta_4\ M/B_{it} + \beta_5\ SG_{it} + \beta_6\ DR_{it} + \beta_7\ OCSH_{it}/TA + \beta_8\ ROA_{it} + \varepsilon_i$.......1	
	Fixed effect model
Constant	**0.0637856** (0.013)**
CAPEX/TA	-0.0000803 (0.999)
OPEX/TA	-0.0331257 (0.247)
FINEX/TA	**-5.267541** (0.000)*
OCASH/TA	**0.3272057** (0.000)*
DR	**-0.1905785** (0.001)*
SG	-0.000403 (0.969)
M/B	0.0058169 (0.427)
ROA	**0.251748** (0.000)*
Sig. for F statistic	(0.000)*
observations	336
R-sq	44%
Hausman test	115.76 (0.000)**

,**, denote variable is significant at 1%,5%,10% level respectively**
Source: prepared by the researcher depending on STATA 12 software.

Model (A.2) The Result using Working Capital Requirements (WCR) as Dependent Variable.

The result of (5.6) table shows the model of the study for Working Capital Requirements (WCR) component estimated by Random Effect, where the value of Hausman Fixed test is not at statistical level (5%). For this reason, the results only concentrates on Random Effect model.

Table (5.6)

Model(A2) result using Random effect model for industrials firms

$WCR_{it}/TA = \beta_0 + \beta_1\ OPEX_{it}/TA + \beta_2\ FIEX_{it}/TA + \beta_3 CAPEX_{it}/TA + \beta_4\ M/B_{it} + \beta_5\ SG_{it} + \beta_6 DR_{it} + \beta_7 OCSH_{it}/TA + \beta_8\ ROA_{it} + \varepsilon_{it}$……..…2	
	Random effect model
Constant	**0.2536209** (0.000)*
CAPEX/TA	-0.0720697 (0.296)
OPEX/TA	**0.0689091** (0.017)**
FINEX/TA	**3.385539** (0.000)*
OCASH/TA	**-0.1317036** (0.013)**
DR	**-0.1862175** (0.001)*
SG	0.0070586 (0.533)
M/B	-0.0096853 (0.217)
ROA	**0.2397307** (0.001)*
Sig. for F statistic	(0.000)*
R-sq	38%
Observations	336
Hausman test	15.30 (0.0536)

,**, denote variable is significant at 1%,5%,10% level respectively**
Source: prepared by the researcher depending on STATA 12software.

Table (5.7)

Summary of Empirical Results of Both Model (A.1 and A.2)for Industrial Sector

	Net Liquidity Balance (NLB)	Working Capital Requirements (WCR)
Model	Fixed effect model	Random effect model
Constant	**0.0637856** (0.013)**	**0.2536209** (0.000)*
CAPEX/TA	-0.0000803 (0.999)	-0.0720697 (0.296)
OPEX/TA	-0.0331257 (0.247)	**0.0689091** (0.017)**
FINEX/TA	**-5.267541** (0.000)*	**3.385539** (0.000)*
OCASH/TA	**0.3272057** (0.000)*	**-0.1317036** (0.013)**
DR	**-0.1905785** (0.001)*	**-0.1862175** (0.001)*
SG	-0.000403 (0.969)	0.0070586 (0.533)
M/B	0.0058169 (0.427)	-0.0096853 (0.217)
ROA	**0.251748** (0.000)*	**0.2397307** (0.001)*

,**, denote variable is significant at 1%,5%,10% level respectively**
Source: prepared by the researcher depending on STATA 12software.

It is observed from table (5.7) that the result indicates a negative insignificant relationship between capital expenditures (CAPEX) with both working capital management component (NLB and WCR);therefore, the researcher reject the (H_1 and H_2) hypothesis, this result is consistent with Ahmadi and Jari (2014) study, the result shows that industrial companies in Jordan do not increase their capital spending, this is due to the fact that

when there is no growth opportunity, which is also insignificant, firms do not need to spend on new equipments and other capital expenditures. The results also suggest that industrial firms face difficulties in generating internal funds to undertake growth opportunities; therefore, they relay more in external funds and long term debt instruments.

The results also show that there is no statistical significance relationship between operating expenditure (OPEX) with working capital management (WCM) measured by net liquidity balance (NLB) which is inconsistent with previous researches such as Appuhami (2009) study. However, the operating expenditure is positive statistical significance relationship with working capital requirements (WCR) component. The result complies with Bellouma (2010). The results indicate that firms with high (OPEX) have difficulties in managing their working capital. Based on the results, the researcher reject the (H_{1a} and H_{2a}) hypothesis.

As for Financial expenditure (FINEX) there is a statistical significance relationship with both working capital management component, which is negative in (NLB), and positive in (WCR). The result complies with Celik and Boyacioglu (2013),Bellouma (2010), Appuhami (2009). The result shows that financial expenditure has higher impact than operating expenditures on working capital requirement (coefficient of OPEX is 0.068 and FINEX 3.38), that is due to the high cost of bank loans

in Jordan. Banks generally impose higher interest rate especially for small and medium companies for the higher risk from asymmetric information problem, and lack of guarantees. And also indicate that firms with inefficient working capital management tend to rely on external sources to fund their activities. This explanation is also confirmed by the negative significant relationship of debit ratio (DR) with both (NLB) and (WCR). The result complies with Celik and Boyacioglu (2013),Bellouma (2010), Chiou and Cheng (2006). The negative relation with net liquidity balance indicates that companies which rely in loans find difficulty to generate cash from their activities, which cause shortage in liquidity. Based on the results, the researcher accepts (H_{1b}, H_{1d}, and H_{2d}) hypothesis, and rejects(H_{2b}) hypothesis.

As for operating cash flow (OCASH) the result shows that there is a positive significant relationship with net liquidity balance (NLB) which complies with Ilays (2014) and Appuhami (2008) results, also have a negative significant relationship with working capital requirements (WCR), which complies with Celik and Boyacioglu (2013),Appuhami (2009), and Chiou and Cheng (2006) result. This suggests that companies tend to increase their operating cash flows and manage their working capital efficiently to operate the daily operation, and to generate cash. Based on

the results, the researcher reject (H_{1c}) hypothesis, and accept (H_{2c}) hypothesis.

The result also indicate that growth (SG) has an insignificant relationship with both net liquidity balance (NLB) and working capital requirement(WCR). This result is consistent with Celik and Boyacioglu (2013) study which conducted in Turkey. The results indicate that there is little or no growth opportunities for industrial firms in Jordan, this may be due to the instable in current economic conduction which effected by external political factors. Based on results, the researcher rejects (H_{1e} and H_{2e}) hypothesis.

With regard to market to book value ratio (M/B), the result also shows an insignificant relationship with both net liquidity balance(NLB) and working capital requirement(WCR). The result complies with Appuhami (2009). Firms value often increase with efficient working capital management and take advantage of profitable investment projects. Therefore, investors tend to buy stock in profitable firms with expectation to increase firm value. So when firms have low growth opportunities and investment, this may cause to decrease in stock trading in the market. Based on the results, the researcher rejects (H_{1f} and H_{2f}) hypothesis.

At last, the result shows that return of assets (ROA) have a positive significant relationship with both net liquidity balance (NLB) and working

capital requirement (WCR). As for (NLB) The result conform with Ilays (2014) and Chiou and Cheng (2006), and for (WCR) the result conforms with Nizar and Afza (2009) and Chiou and Cheng (2006). The result suggests that industrial companies with higher profit tend to adopt conservation policy with more cash for emergencies, which lead to high balance of liquidity. And mange their working capital with less concerned which lead to more inventories and account receivable, which lead to positive (WCR). Based on results, the researcher rejects (H_{1g} and H_{2g}) hypothesis.

5.4.2 Results of Services Sector (Model B).

This part only presents the result of models analysis for services part only for both working capital components, which are net liquidity balance and working capital management.

Model(B.1)The Result using Net Liquidity Balance (NLB) as Dependent Variable.

The results of (5.8) table shows the model of the study for Net Liquidity Balance (NLB) estimated by Random Effect Model, where the value of Hausman Fixed test is not at statistical level (5%). For this reason, the results only concentrate on Random Effect model.

Table (5.8)

Model(B1) Result using Random Effect Model for Services Firms

$NLB_{it}/TA = \beta_0 + \beta_1 OPEX_{it}/TA + \beta_2 FIEX_{it}/TA + \beta_3 CAPEX_{it}/TA + \beta_4 M/B_{it} + \beta_5 SG_{it} + \beta_6 DR_{it} + \beta_7 OCSH_{it}/TA + \beta_8 ROA_{it} + \varepsilon_i$.......1	
	Random effect model
Constant	**0.1245344** (0.001)*
CAPEX/TA	-0.0879791 (0.233)
OPEX/TA	0.0050255 (0.918)
FINEX/TA	**-8.051732** (0.000)*
OCASH/TA	**0.3871299** (0.000)*
DR	**-0.1332893** (0.064)***
SG	**0.0243209** (0.070)***
M/B	0.0143065 (0.119)
ROA	**-0.2619534** (0.0410)**
Sig. for F statistic	(0.000)*
observations	216
R-sq	40%
Hausman test	2.33 (0.9694)

,**, denote variable is significant at 1%,5%,10% level respectively**
Source: prepared by the researcher depending on STATA 12 software.

Model (B.2) The Result using Working Capital Requirements (WCR) as Dependent Variable.

The results of (5.9) table, shows the model of the study for working capital requirements(WCR) component estimated by Random Effect model, where the value of Hausman Fixed test is not at statistical level (5%). For this reason, the results only concentrate on Random Effect model.

Table (5.9)

Model(B2) Result using Random Effect Model for Services Firms

$WCR_{it}/TA = \beta_0 + \beta_1\ OPEX_{it}/TA + \beta_2\ FIEX_{it}/TA + \beta_3 CAPEX_{it}/TA + \beta_4\ M/B_{it} + \beta_5\ SG_{it} + \beta_6 DR_{it} + \beta_7 OCSH_{it}/TA + \beta_8\ ROA_{it} + \varepsilon_{it}$……2	
	Random effect model
Constant	0.0510425 (0.120)
CAPEX/TA	-0.00044 (0.995)
OPEX/TA	**0.12613** (0.005)**
FINEX/TA	**2.187079** (0.016)**
OCASH/TA	-0.08834 (0.220)
DR	**-0.21104** (0.001)*
SG	0.016167 (0.196)
M/B	-0.00221 (0.795)
ROA	**0.420764** (0.000)*
Sig. for F statistic	(0.000)*
observations	216
R-sq	20%
Hausman test	9.59 (0.2949)

,**, denote variable is significant at 1%,5%,10% level respectively**
Source: prepared by the researcher depending on STATA 12 software.

Table (5.10)

Summary of Empirical Results of both Model(B.1 and B.2)for services sector

	Net Liquidity Balance (NLB)	Working Capital Requirements (WCR)
Model	**Random effect model**	**Random effect model**
Constant	**0.1245344** (0.001)*	0.0510425 (0.120)
CAPEX/TA	-0.0879791 (0.233)	-0.00044 (0.995)
OPEX/TA	0.0050255 (0.918)	**0.12613** (0.005)**
FINEX/TA	**-8.051732** (0.000)*	**2.187079** (0.016)**
OCASH/TA	**0.3871299** (0.000)*	-0.08834 (0.220)
DR	**-0.1332893** (0.064)***	**-0.21104** (0.001)*
SG	**0.0243209** (0.070)***	0.016167 (0.196)
M/B	0.0143065 (0.119)	-0.00221 (0.795)
ROA	**-0.2619534** (0.0410)**	**0.420764** (0.000)*

,**, denote variable is significant at 1%,5%,10% level respectively**
Source: prepared by the researcher depending on STATA 12software.

It is observed from table (5.10) that the result indicates a negative insignificant relationship between capital expenditures (CAPEX) with both working capital management component (NLB and WCR):therefore, the researcher rejects the (H_1 and H_2) hypothesis. This result is consistent with Ahmadi and Jari (2014) study, the result shows that services companies in Jordan do not increase their capital spending which is due to the shortage in

liquidity. The results also suggest that industrial firms face difficulties in generating internal funds to undertake growth opportunities; therefore, they rely more on external funds and long term debt instruments. These results are identical to the results of industrial sector.

The results also show that there is no statistical significance relationship between operating expenditure (OPEX) with working capital management (WCM) measured by net liquidity balance (NLB) which is inconsistent with previous researches such as Appuhami (2009) study. However, the operating expenditure is a positive statistical significance relationship with working capital requirements (WCR) component. the result complies with Bellouma (2010). The results may indicates that firms with high (OPEX) have difficulties in managing working capital. Based on results, the researcher rejects the (H_{1a} and H_{2a}) hypothesis. The results are also identical to the industrial sector results.

As for Financial expenditure (FINEX) there is a statistical significance relationship with both working capital management component, which is negative in (NLB), and positive in (WCR). The result complies with Celik and Boyacioglu (2013),Bellouma (2010), Appuhami (2009). The result shows that financial expenditure has higher impact than operating expenditures on working capital requirement (coefficient of OPEX is 0.126 and FINEX 2.18), that is due to the high cost of bank loans

in Jordan. Banks generally imposes higher interest rate especially for small and medium companies for the higher risk from asymmetric information problem, and lack of guarantees. And also indicate that firms with inefficient working capital management tend rely on external sources to fund their activities. This explanation is also confirmed by the negative significant debit ratio (DR) with both (NLB) and (WCR).the result complies with Celik and Boyacioglu (2013),Bellouma (2010), Chiou and Cheng (2006). the negative relation with net liquidity balance indicate that companies which rely on loans find difficulty to generate cash from their activities, which cause shortage in liquidity. Based on results, the researcher accepts (H_{1b}, H_{1d}, and H_{2d}) hypothesis, and rejects(H_{2b}) hypothesis. The results are also identical to the industrial sector results.

As for operating cash flow (OCASH) the result show that there is a positive significant relationship with net liquidity balance(NLB) which complies with Ilays (2014) and Appuhami (2008) results, also has a negative insignificant relationship with working capital requirements (WCR), which complies with Gill (2011). This suggests that companies tend to increase their operating cash flows and to operate the daily operation, and when there is a growth opportunities. Based on results, the researcher rejects (H_{1c} and H_{2c}) hypothesis. Compared to industrial sector,

(NLB) results agree with services sector results, while (WCR) results disagree with it.

The result also postulates a positive significant relationship between sale growth (SG) with net liquidity balance (NLB), which is consistent with Appujami (2009) results. On the other hand sale growth has a positive insignificant relationship with working capital requirement (WCR). this result is consistent with Celik and Boyacioglu (2013) study which conducted in Turkey. The result explains that services Jordanian companies unlike industrial companies tend to increase their cash balance and liquidity when there is a growth opportunities. Based on results, the researcher rejects (H_{1e} and H_{2e}) hypothesis.

With regard to market to book value ratio (M/B), the result also shows insignificant relationship with both net liquidity balance(NLB) and working capital requirement (WCR). The result complies with Appuhami (2009). Firms value often increase with efficient working capital management and take the advantage of profitable investment project. Therefore, investors tend to invest their stock in profitable firms with expectation to increase firm value. So, when firms have low growth opportunities and investment, this may cause to decrease stock trading in market. Based on results, the researcher reject (H_{1f} and H_{2f}) hypothesis.

At last, the result shows that return on assets (ROA), has a negative significant relationship with net liquidity balance (NLB), and a positive significant with working capital requirement (WCR). As for (NLB) the result is inconsistent with previous researches such as Ilays (2014) study, and for (WCR) the result complies with Nizar and Afza (2009) and Chiou and Cheng (2006). The result suggests that companies with higher profit tend to manage their working capital with less concerned, which lead to more inventories and account receivable, or firms may adopt loose credit policy in receivables to maintain their customers, and may adopt aggressive policy, which lead to low liquidity. Based on results, the researcher accepts (H_{1g}) and rejects (H_{2g}) hypothesis. Compared to industrial sector, (NLB) results disagree with services sector results, while (WCR) results agree with it.

Finally, it can be said that based on the results, that the hypothesis (H_{1b},H_{1d},H_{2d})for the study have been accepted, while the other hypothesis (H_1,H_{1a}, H_{1c}, H_{1e}, H_{1f}, H_2, H_{2a}, H_{2b}, H_{2e}, H_{2f}, H_{2g}) have been rejected for both industrial and services sectors, as for (H_{2c}) hypothesis, it has been accepted in industrial sector, and rejected in services sector, and (H_{1g}) which rejected in industrials sector and accepted in services sectors, as shown in table (5.11). The majority of results as noted shows the similarity in both sectors, however the

services sector is unlike to industrial firms in sales growth, which is a positive significant with net liquidity balance. Therefore, services firms tend to hold more cash balance and to increase the liquidity to undertake growth opportunities. The result also differs in operating cash flows which is significant with working capital requirements in industrial sector, and insignificant in services sector, which may suggest the services firms rely more on external funds rather than internal fund to undertake growth opportunities.

Table(5.11)

Summary of the Main Result of Hypothesis

	Hypothesis	Industrial sector	Services sector
H_1	There is significant negative relationship between capital expenditure (CAPEX) and net liquidity balance (NLB).	reject	reject
H_{1a}	There is significant negative relationship between operating expenditure (OPEX) and net liquidity balance (NLB).	reject	reject
H_{1b}	There is significant negative relationship between financial expenditure (FIEX) and net liquidity balance (NLB).	accept	accept
H_{1c}	There is significant negative relationship between operating cash flow operating (OCASH) and net liquidity balance (NLB).	reject	reject
H_{1d}	There is significant negative relationship between debt ratio (DR) and net liquidity balance (NLB).	accept	accept
H_{1e}	There is significant negative relationship between sales growth (SG) and net liquidity balance (NLB).	reject	reject
H_{1f}	There is significant negative relationship between market to book value ratio(M/B) and net liquidity balance (NLB).	reject	reject
H_{1g}	There is significant negative relationship between return on assets (ROA) and net liquidity balance (NLB).	reject	accept
H_2	There is significant negative relationship between capital expenditure (CAPEX) and working capital requirement (WCR).	reject	reject
H_{2a}	There is significant negative relationship between operating expenditure (OPEX) and working capital requirement (WCR).	reject	reject
H_{2b}	There is significant negative relationship between financial expenditure (FIEX) and working capital requirement (WCR).	reject	reject
H_{2c}	There is significant negative relationship between operating cash flow operating (OCASH) and working capital requirement (WCR).	accept	reject
H_{2d}	There is significant negative relationship between debt ratio (DR) and working capital requirement (WCR).	accept	accept
H_{2e}	There is significant negative relationship between sales growth (SG) and working capital requirement (WCR).	reject	reject
H_{2f}	There is significant negative relationship between market to book value ratio(M/B) and working capital requirement (WCR).	reject	reject
H_{2g}	There is significant negative relationship between return on assets (ROA) and working capital requirement (WCR).	reject	reject

Chapter six

Conclusions and Recommendations

6.1 Introduction

6.2 Conclusions

6.3 Recommendations

Chapter six

Conclusions and Recommendations

6.1 Introduction:

This study estimates the relationship between working capital management and capital expenditure for sample of 69 industrial and services firms listed on Amman Stock Exchange (ASE) during the period between (2006-2013). And in order to accomplish the study goal, the used model examined eight independent variables which are expected to affect the working capital management and capital expenditure for industrial and services firms in Jordan, these variables are operating expenditure, financial expenditure, capital expenditure, market to book value ratio, debt ratio, sales growth, operating cash flow, and return on assets. And the model also used two dependent variables, net liquidity balance and working capital requirements, which consider as proxy for working capital management. In addition Panel Data Analysis is used for testing the hypotheses. This chapter aims to show the most important result reached to and the recommendation that the study indicates.

6.2 Summary of the Main Results:

The study finds the results that can be summarized as follows:

1. There is no statistical significance relationship between capital expenditure and working capital management measured by net liquidity balance and working capital requirements in both industrial and services firms in Jordan.
2. There is no statistical significance relationship between market to book value ratio (MB) and working capital management measured by net liquidity balance and working capital requirements in both industrial and services firms in Jordan.
3. There is a negative significance relationship between dept ratio (DR) and working capital management measured by net liquidity balance and working capital requirements in both industrial and services firms in Jordan.
4. There is a negative significance relationship between financial expenditure (FINEX) and working capital management measured by net liquidity balance, and a positive significance with working capital requirements in both industrial and services firms in Jordan.
5. There is no statistical significance relationship between operating expenditure (OPEX) and working capital management measured by net liquidity balance, and a positive significance working capital requirements in both industrial and services firms in Jordan.
6. There is a negative significance relationship between financial expenditure (FINEX) and working capital management measured by net liquidity balance, and a positive significance with working capital requirements in both industrial and services firms in Jordan.

7. There is a positive significance relationship between operating cash flow (OCASH) and working capital management measured by net liquidity balance in both industrial and services firms in Jordan.
8. There is a negative significance relationship between operating cash flow (OCASH) and working capital management measured by working capital requirements in industrial firms, and an insignificance relationship with services firms.
9. There is no statistical significance relationship between sales growth (SG) and working capital management measured by working capital requirements in both industrial and services firms in Jordan.
10. There is no statistical significance relationship between sales growth(SG) and working capital management measured by net liquidity balance in industrial firms, and there is a positive significance relationship in services firms.
11. There is a positive significance relationship between return of assets (ROA) and working capital management measured by working capital requirements in both industrial and services firms in Jordan.
12. There is a positive significance relationship between return of assets (ROA) and working capital management measured by net liquidity balance in industrial firms, and a negative significance relationship in services firms in Jordan.

Table (6.1)

Summary of the Main Results

Model	**NLB**	**NLB**	**WCR**	**WCR**
Firms sector	**Industrial sector**	**Services sector**	**Industrial sector**	**Services sector**
OPEX	Insignificant*	Insignificant*	**+ significant***	**+ significant***
FINEX	**- significant***	**- significant***	**+ significant***	**+ significant***
CAPEX	Insignificant*	Insignificant*	Insignificant*	Insignificant*
DR	**- significant***	**- significant***	**- significant***	**- significant***
OCASH	**+ significant***	**+ significant***	**- significant**	insignificant
SG	insignificant	+significant	Insignificant*	Insignificant*
MB	Insignificant*	Insignificant*	Insignificant*	Insignificant*
ROA	**+ significant**	**- significant**	**+ significant***	**+ significant***

***means that the result is identical in both industrial and services sector**

6.3 Recommendations

In the light of the previous results, the study recommends the following:

1- The results indicates that firms in Jordan rely heavily on external funds to finance their growth opportunity, and have shortage in its liquidity. Therefore its recommended that firms should be more interested in their liquidity, and to rely more on internal fund though proper working capital management, than relying on loans to finance growth opportunity; therefore, firms must balance between liquidity and profitability to achieve their financial goals.

2- The results indicate that firms in Jordan have a positive working capital requirement relationship with capital expenditures. Therefore its

recommended that firms should manage their receivables and payable with more concern by lengthiness the payments of loans and acceleration collection of receivables.

3- For other scholars and researchers in this field, it recommends that the financial sector should be included in the study sample, and the variables that are not mentioned in this study should be used.

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Appendices

Appendix (1)

List of Industrial and Services Firms Included in the Sample

Company number	Code No	Code Name	Company's name	Sub-Sector
1	131002	ABMS	AL-BILAD MEDICAL SERVICES	Services
2	141021	ICMI	INTERNATIONAL FOR MEDICAL INVESTMENT	Services
3	131051	ZEIC	AL-ZARQA EDUCATIONAL AND INVESTMENT	Services
4	131052	AIEI	THE ARAB INTERNATIONL FOR EDUCATION AND INVESTMENT.	Services
5	131093	ITSC	ITTIHAD SCHOOLS	Services
6	131220	AIFE	AL-ISRA FOR EDUCATION AND INVESTMENT "PLC"	Services
7	131221	PEDC	PETRA EDUCATION COMPANY	Services
8	131222	PIEC	PHILADELPHIA INTERNATIONAL EDUCATIONAL INVESTMENT COMPANY	Services
9	131003	JOHT	JORDAN HOTELS and TOURISM	Services
10	131005	AIHO	ARAB INTERNATIONAL HOTELS	Services
11	131067	ZARA	ZARA INVESTEMENT HOLDING	Services
12	131098	MALL	AL-DAWLIYAH FOR HOTELS and MALLS	Services
13	131211	JPTD	JORDAN PROJECTS FOR TOURISM DEVELOPMENT	Services
14	131012	SHIP	JORDAN NATIONAL SHIPPING LINES	Services
15	131034	SITT	SALAM INTERNATIONL TRANSPORT TRADING	Services
16	131080	JETT	JORDAN EXPRESS TOURIST TRANSPORT	Services
17	131083	ALFA	JORDAN INVESTMENT and TOURISM TRANSPORT(ALFA)	Services
18	131208	NAQL	TRANSPORTand INVESTMENT BARTER COMPANY	Services
19	131206	JTEL	JORDAN TELECOM	Services
20	131232	CEBC	AL-FARIS NATIONAL COMPANY FOR INVESTMENT and EXPORT	Services

21	131013	PRES	JORDAN PRESS FOUNDATION/AL-RA'I	Services
22	131004	JOEP	JORDAN ELECTRIC POWER	Services
23	131010	IREL	IRBID DISTRICT ELECTRICITY	Services
24	131022	JDFS	JORDANIAN DUTY FREE SHOPS	Services
25	131023	JITC	JORDAN INTERNATIONAL TRADING CENTER	Services
26	131062	JOTF	JORDAN TRADE FAC	Services
27	131081	SPTI	SPECIALIZED TRADING and INVESTMENT	Services
28	141012	DADI	DAR AL DAWA DEVELOPMENT and INVESTMENT	Industrial
29	141023	APHC	ARAB CENTER FOR PHARM.and CHEMICALS	Industrial
30	141073	MPHA	MIDDLE EAST PHARMA. and CHMICAL IND. and MEDICAL APPLIANCES	Industrial
31	141204	JPHM	THE JORDANIAN PHARMACEUTICAL MANUFACTURING	Industrial
32	141210	HPIC	HAYAT PHARMACEUTICAL INDUSTRIES CO.	Industrial
33	141009	ICAG	THE INDUSTRIAL COMMERCIAL and AGRICULTURAL	Industrial
34	141026	JOIC	JORDAN CHEMICAL INDUSTRIES	Industrial
35	141027	UNIC	UNIVERSAL CHEMICAL INDUSTRIES	Industrial
36	141054	NATC	NATIONAL CHLORINE INDUSTRIES	Industrial
37	141055	JOIR	JORDAN INDUSTRIAL RESOURCES	Industrial
38	141086	INOH	COMPREHENSIVE MULTIPLE PROJECT COMPANY	Industrial
39	141209	MBED	THE ARAB PESTICIDES and VETERINARY DRUGS MFG. CO.	Industrial
40	141003	APCT	ARAB COMPANY FOR INVESTMENT PROJECTS	Industrial
41	141017	JOPC	JORDAN PAPER AND CARDBOARD FACTORIES	Industrial
42	141100	EKPC	AL-EKBAL PRINTING AND PACKAGING	Industrial
43	141002	JPPC	JORDAN POULTRY PROCESSING and MARKETING	Industrial
44	141004	JODA	JORDAN DAIRY	Industrial

45	141029	GENI	GENERAL INVESTMENT	Industrial
46	141052	UMIC	UNIVERSAL MODERN INDUSTRIES	Industrial
47	141084	NATP	NATIONAL POULTRY	Industrial
48	141141	JVOI	JORDAN VEGETABLE OIL INDUSTRIES	Industrial
49	141048	EICO	AL-EQBAL INVESTMENT COMPANY LTD	Industrial
50	141005	GENM	GENERAL MINING COMPANY PLC	Industrial
51	141006	AALU	ARAB ALUMINIUM INDUSTRY /ARAL	Industrial
52	141011	NAST	NATIONAL STEEL INDUSTRY	Industrial
53	141018	JOPH	JORDAN PHOSPHATE MINES	Industrial
54	141042	JOCM	THE JORDAN CEMENT FACTORIES	Industrial
55	141043	APOT	THE ARAB POTASH	Industrial
56	141070	JOST	JORDAN STEEL	Industrial
57	141091	NATA	NATIONAL ALUMINIUM INDUSTRIAL	Industrial
58	141203	TRAV	TRAVERTINE COMPANY LTD	Industrial
59	141019	JOPI	THE JORDAN PIPES MANUFACTURING	Industrial
60	141038	WOOD	JORDAN WOOD INDUSTRIES / JWICO	Industrial
61	141065	RMCC	READY MIX CONCRTE AND CONSTRUCTION SUPPLIES	Industrial
62	141077	IENG	RUM ALADDIN INDUSTRIES	Industrial
63	141098	ASPMM	ARABIAN STEEL PIPES MANUFACTURING	Industrial
64	141208	AQRM	AL-QUDS READY MIX	Industrial
65	141039	WIRE	NATIONAL CABLE and WIRE MANUFACTURING	Industrial
66	141072	AEIN	ARAB ELECTRICAL INDUSTRIES	Industrial
67	141014	JOWM	THE JORDAN WORSTED MILLS	Industrial
68	141031	WOOL	AKARY FOR INDUSTRIES AND REAL ESTATE INVESTMENTS	Industrial
69	141061	ELZA	EL-ZAY READY WEAR MANUFACTURING	Industrial

(ملخص الدراسة)

أثر الإنفاق الرأسمالي للشركات على إدارة رأسمال العامل: دراسة حالة تطبيقيه على الشركات الأردنية

إعداد الطالبة: رنده عدنان الطيان

إشراف الأستاذة الدكتورة:

منى ممدوح مولا

هدفت هذه الدراسة إلى استقصاء العلاقة بين الإنفاق الرأسمالي و إدارة رأس المال العامل ل 69 شركه, تتضمن (42) شركه صناعية, و(27) شركة خدمية مدرجه في بورصة عمان خلال الفترة ما بين 2006-2013.وقد تم إجراء التحليل للقطاعين الخدمي و الصناعي بشكل منفصل, حيث تم الاعتماد على مؤشرين رئيسين لقياس كفاءة إدارة رأس المال العامل و هما :(NLB) Net Liquidity Balance و (WCR) Working capital requirements.

أظهرت النتائج إلى عدم وجود علاقة ذات دلاله إحصائية للإنفاق الرأسمالي و إدارة رأسمال العامل المتمثلة بمقياسين (WCR) و(NLB) لكلا القطاعين الصناعي و الخدمات. علاوة على ذلك أظهرت النتائج انه لا يوجد علاقة ذات دلالة إحصائية للإنفاق التشغيلي متمثله بمؤشر(NLB) , بينما يوجد علاقة موجبه ذات دلاله إحصائية مع المؤشر (WCR).أما بالنسبة للإنفاق المالي, فقد أظهرت النتائج انه وجود علاقة سالبه ذات دلاله إحصائية لمؤشر (NLB),وعلاقة موجبه ذات دلاله إحصائية لمؤشر(WCR).

أما بالنسبة للمتغيرات الضابطة (control variables), فقد أظهرت الدراسة وجود علاقة ذات دلاله إحصائية بين معدل المديونية و العائد على مجموع الموجودات مع المؤشرين (NLB) و(WCR) للقطاعين الصناعي و الخدمي, أما بالنسبة إلى صافي التدفق النقدي من العمليات التشغيلية, فقد أظهرت الدراسة على وجود علاقة ذات دلاله إحصائية مع المؤشرين (NLB) و(WCR) في القطاع الصناعي, وعلاقة ذات دلاله إحصائية مع (WCR) في القطاع الخدمي.

الكلمات المفتاحية: إدارة رأس مال العامل, الإنفاق الرأسمالي, الشركات الصناعية, الشركات الخدمية, الأردن.

الْحَمْدُ لِلَّهِ الَّذِي هَدَانَا لِهَذَا وَمَا كُنَّا

لِنَهْتَدِيَ لَوْلَا أَنْ هَدَانَا اللَّهُ